

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 775 801  
Injection pump  
Pump designation : PES5P120A720LS7172  
EP type number : 0 412 725 805  
Governor  
Governor design. : RSV350...1050POA529  
-2  
Governor no. : 0 421 833 312

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 22.9...23.2

100 s: (22.6...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.5...4.8

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1500

Del.quantity : 229.0...232.0

1000 : (226.0...235.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control Lever  
position degrees: 50...58

Testing:

1st rack travel in: 11.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.65  
Speed rpm : 350  
Rack travel in mm : 4.50...4.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.00  
3rd speed rpm : 875  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 500  
Rack travel in m: 12.20...12.40  
3rd pressure hPa : 1050  
Rack travel in m: 13.30...13.50  
4th pressure hPa : 1500  
Rack travel in m: 13.90...14.10  
5th pressure hPa : -  
Rack travel in m: 9.50...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

A02

Aneroid pressure h: 750  
Speed rpm : 700  
Del.quantity cm3/ : 235.0...238.0  
1000 s: (232.0...241.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 750  
Del.quantity cm3/ : 251.0...254.0  
1000 s: (248.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 c  
Edition : 07.02.89  
Replaces : 9.9.88  
Test oil : ISO-4113

Combination no. : 0 402 776 805

Injection pump  
Pump designation : PES6P120A720LS7155  
EP type number : 0 412 726 812  
Governor  
Governor design. : RSV350...1050POA529  
-1  
Governor no. : 0 421 833 295

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 13.40...13.50  
Del.quantity cm3/ : 24.0...24.2  
100 s: (23.7...24.5)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 4.5...4.8  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1400  
Del.quantity : 240.0...242.0  
1000 : (237.0...245.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 12.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.65  
Speed rpm : 350  
Rack travel in mm : 4.50...4.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 825  
Rack travel in m: 14.10...14.30  
3rd speed rpm : 950  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 400  
Rack travel in m: 11.40...11.60  
3rd pressure hPa : 850  
Rack travel in m: 13.20...13.40  
4th pressure hPa : 1400  
Rack travel in m: 14.30...14.50  
5th pressure hPa : -  
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 650  
Speed rpm : 600  
Del.quantity cm3/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 825  
Del.quantity cm3/ : 263.0...266.0  
1000 s: (260.0...269.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 151.0...154.0  
1000 s: (148.0...157.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 D 9  
Edition : 10.02.89  
Replaces : 09.01.89  
Test oil : ISO-4113

Combination no. : 0 403 436 108

Injection pump  
Pump designation : PES6MM100/120RS1143  
EP type number : 0 413 406 137  
Governor  
Governor design. : RQV350...1100MM82-3  
Governor no. : 0 420 083 162

Cust. part no. : 3914125

Customer-spec. information  
Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 186.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

A05

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15  
: (3.00...3.20)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del. quantity cm3/ : 14.8...15.0

100 s: (14.6...15.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 7.2...7.4  
Del. quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1240  
travel mm : 8.80...9.20  
2nd speed rpm : 1140  
travel mm : 7.80...8.00  
3rd speed rpm : 700  
travel mm : 3.80...4.40  
4th speed rpm : 350  
travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 900  
Del. quantity : 148.0...150.0  
1000 : (146.0...152.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.30  
Speed rpm : 350  
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION  
Speed rpm : 360...500

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 700  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 1050  
Rack travel in m: 12.40...12.60  
4th speed rpm : 900  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 520  
Rack travel in m: 12.70...13.00  
3rd pressure hPa : 900  
Rack travel in m: 13.20...13.30

## START CUT-OUT

Speed 1/min : 270 (280)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 159.0...161.0  
1000 s: (157.0...163.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 103.0...106.0  
1000 s: (101.5...107.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1150...1160

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (202.0...228.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.20...7.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 D 7  
Edition : 10.02.89  
Replaces : 11.11.88  
Test oil : ISO-4113

Combination no. : 0 403 436 109

Injection pump  
Pump designation : PES6MW100/120RS1143  
EP type number : 0 413 406 137  
Governor  
Governor design. : RQV300...1050MW82-4  
Governor no. : 0 420 083 168

Cust. part no. : 3915581

Customer-spec. information  
Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 175.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

A07

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15  
: (3.00...3.20)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 12.60...12.70  
Del. quantity cm3/ : 14.8...15.0  
100 s: (14.6...15.2)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 7.7...7.9  
Del. quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1210  
travel mm : 9.00...9.40  
2nd speed rpm : 1100  
travel mm : 7.90...8.10  
3rd speed rpm : 550  
travel mm : 3.00...3.60  
4th speed rpm : 300  
travel mm : 1.10...1.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 900  
Del. quantity : 148.0...150.0  
1000 : (146.0...152.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.30  
Speed rpm : 300  
Rack travel in mm : 7.70...7.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.50...9.70

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 520  
Rack travel in m: 11.90...12.20  
3rd pressure hPa : 900  
Rack travel in m: 12.60...12.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 145.5...148.5  
1000 s: (143.0...151.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 78.0...80.0  
1000 s: (76.0...82.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 215.0...225.0  
1000 s: (212.0...228.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.70...7.90  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark/lock = 8.0°  
angular displacement of the cam after  
start of delivery of cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 6,1 F  
 Edition : 24.02.89  
 Replaces : 4.86  
 Test oil : ISO-4113

Combination no. : 0 403 446 151

Injection pump  
 Pump designation : PES6MW100/320RS1119  
 EP type number : 0 413 406 113  
 Governor  
 Governor design. : RGV300..1400MW58  
 Governor no. : 0 420 083 080

Customer-spec. information  
 Customer : VOLVO

Engine : TD 61..3012

1st version kW : 113.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.35

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.6

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.35

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1480

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.00

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1565...1595

4th rack travel in: 1680

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5...6.6

Testing:

Speed rpm : 100  
Minimum rack trave: 8.10  
Speed rpm : 300  
Rack travel in mm : 6.50...6.60

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.60  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL. 6,1 H  
Edition : 03.03.89  
Replaces : 29.04.88  
Test oil : ISO-4113

Combination no. : 0 403 446 152

Injection pump  
Pump designation : PES6MW100/320RS1119  
EP type number : 0 413 406 113  
Governor  
Governor design. : RGV300...1400MW57  
Governor no. : 0 420 083 078

Customer-spec. information  
Customer : VOLVO

Engine : TD 61-3012

1st version kW : 132.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 9.0...9.2

100 s : (8.8...9.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1580

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.40...8.60

3rd speed rpm : 550

travel mm : 3.40...4.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1480

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 505

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 10.60  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1595...1625  
4th rack travel in: 1725  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.90...7.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 445  
Rack travel mm : 11.20...11.30

Measurement  
Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 310  
Rack travel in m: 10.30...10.50  
3rd pressure hPa : 505  
Rack travel in m: 11.40...11.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 75.0...77.0  
1000 s: (73.0...79.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

A12

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.90...7.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 6,1 G  
 Edition : 03.03.89  
 Replaces : 29.04.88  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 153  
 Injection pump  
 Pump designation : PES6MW100/32ORS1119-  
 1  
 EP type number : 0 413 406 114  
 Governor  
 Governor design. : RQV300..1400MW57-1  
 Governor no. : 0 420 083 079

Customer-spec. information  
 Customer : VOLVO

Engine : TD 61..3012

1st version kW : 150.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 10.4...10.6

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1580

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.40...8.60

3rd speed rpm : 550

travel mm : 3.40...4.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1480

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 615

Del.quantity : 104.0...106.0

1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1590...1620  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.30...6.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 525  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 270  
Rack travel in m: 10.30...10.50  
3rd pressure hPa : 615  
Rack travel in m: 12.00...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 75.0...77.0  
1000 s: (73.0...79.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 Q  
Edition : 07.02.89  
Replaces : 30.09.88  
Test oil : ISO-4113

Combination no. : 0 403 446 190

Injection pump  
Pump designation : PES6MW100/320RS1154  
EP type number : 0 413 406 144  
Governor  
Governor design. : RGV275...1250MW80  
Governor no. : 0 420 083 128

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226

1st version kW : 128.7  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 16.50...19.50

A15

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.10...6.30

Del.quantity cm<sup>3</sup>/ : 2.3...2.7

100 s: (2.0...2.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

travel mm : 9.20...9.60

2nd speed rpm : 1300

travel mm : 7.80...8.00

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 800

Del.quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1330...1350  
2nd rack travel in: 4.00  
Speed rpm : 1490...1530  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.8

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 275  
Rack travel in mm : 6.10...6.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 800  
Rack travel mm : 12.90...13.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.10...11.00  
2nd pressure hPa : 200  
Rack travel in m: 11.80...11.50  
3rd pressure hPa : 360  
Rack travel in m: 12.60...12.70

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 750  
Del.quantity cm3/ : 91.5...94.5  
1000 s: (89.0...97.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 49.0...51.0  
1000 s: (47.0...53.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1330...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 88.0...102.0  
1000 s: (85.0...105.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.30...6.10  
Del.quantity cm3/ : 23.0...27.0  
1000 s: (20.5...29.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 S  
Edition : 09.12.88  
Replaces : 06.04.88  
Test oil : ISO-4113

Combination no. : 0 403 446 193

Injection pump  
Pump designation : PES6MW100/32ORS1159  
EP type number : 0 413 406 146  
Governor  
Governor design. : RGV350...1300MW72-3  
Governor no. : 0 420 083 142

Customer spec. information  
Customer : NAVISTAR

Engine : DT-466

1st version kW : 136.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.4...6.5  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 7.80...8.00  
2nd speed rpm : 1340  
travel mm : 8.80...9.20  
3rd speed rpm : 500  
travel mm : 2.60...3.20  
4th speed rpm : 350  
travel mm : 1.30...1.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del.quantity : 90.0...92.0  
1000 : (88.0...94.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 46...51

Testing:  
1st rack travel in: 9.60  
Speed rpm : 1370...1390  
2nd rack travel in: 4.00  
Speed rpm : 1475...1485  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.50

CONSTANT REGULATION  
Speed rpm : 370...500

#### START CUT-OUT

Speed 1/min : 180 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 94.0...98.0  
1000 s: (92.0...100.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.60  
Speed rpm : 1370...1390

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.50

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R20  
 Edition : 09.12.88  
 Replaces : 05.08.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 194

Injection pump  
 Pump designation : PES6MM100/32ORS1112  
 EP type number : 0 413 406 108  
 Governor  
 Governor design. : RQV350...1300MW46-12  
 Governor no. : 0 420 083 143

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 154.5  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.6

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 800

Del.quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...49

### Testing:

1st rack travel in: 9.80  
Speed rpm : 1365...1385  
2nd rack travel in: 4.00  
Speed rpm : 1470...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

### Testing:

Speed rpm : 100  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.50...5.60

### CONSTANT REGULATION

Speed rpm : 360...450

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 170  
Rack travel mm : 10.40...10.50

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 230  
Rack travel in m: 10.60...10.90  
3rd pressure hPa : 800  
Rack travel in m: 10.80...10.90

### START CUT-OUT

Speed 1/min : 180 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 105.0...109.0  
1000 s: (103.0...111.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.9)  
Aneroid pressure h: -

A20

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (85.0...91.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1365...1385

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...5.60  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R21  
Edition : 09.12.88  
Replaces : 19.02.88  
Test oil : ISO-4113

Combination no. : 0 403 446 195

Injection pump  
Pump designation : PES6MW100/32ORS1112  
EP type number : 0 413 406 108  
Governor  
Governor design. : RQV350...1200MW46-13  
Governor no. : 0 420 083 144

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 180.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.3...6.4  
Del.quantity cm3/ : 1.9...2.3  
100 s: (1.6...2.5)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 8.30...8.50  
2nd speed rpm : 1460  
travel mm : 9.10...9.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 800  
Aneroid pressure h: 800  
Del.quantity : 117.5...119.5  
1000 : (115.5...121.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 43...48

### Testing:

1st rack travel in: 11.30  
Speed rpm : 1265...1285  
2nd rack travel in: 4.00  
Speed rpm : 1395...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

### CONSTANT REGULATION

Speed rpm : 360...450

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 190  
Rack travel mm : 11.20...11.30

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 360  
Rack travel in m: 11.90...12.20  
3rd pressure hPa : 800  
Rack travel in m: 12.30...12.40

### START CUT-OUT

Speed 1/min : 180 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (118.0...126.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 86.0...88.0  
1000 s: (84.0...90.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1265...1285

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R23  
Edition : 09.12.88  
Replaces : 19.02.88  
Test oil : ISO-4113

Combination no. : 0 403 446 196

Injection pump  
Pump designation : PES6MW100/32ORS1112  
EP type number : 0 413 406 108  
Governor  
Governor design. : RQV350...1200MW46-14  
Governor no. : 0 420 083 145

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 169.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.2...6.3  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 8.30...8.50  
2nd speed rpm : 1460  
travel mm : 9.10...9.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 800  
Aneroid pressure h: 800  
Del.quantity : 104.0...106.0  
1000 : (102.0...108.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...49

### Testing:

1st rack travel in: 10.40  
Speed rpm : 1250...1270  
2nd rack travel in: 4.00  
Speed rpm : 1390...1400  
4th rack travel in: 1460  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.2

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.30

### CONSTANT REGULATION

Speed rpm : 360...450

### Aneroid/Altitude

#### Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 180  
Rack travel mm : 10.80...10.90

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 270  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 800  
Rack travel in m: 11.40...11.50

### START CUT-OUT

Speed 1/min : 180 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 107.0...111.0  
1000 s: (105.0...113.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 84.0...86.0  
1000 s: (82.0...88.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1250...1270

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.30  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R24  
 Edition : 09.12.88  
 Replaces : 22.04.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 197

Injection pump  
 Pump designation : PES6MW100/320RS1112  
 EP type number : 0 413 406 108  
 Governor  
 Governor design. : RQV350...1200MW46-15  
 Governor no. : 0 420 083 146

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 158.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.4

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 8.30...8.50

2nd speed rpm : 1460  
 travel mm : 9.10...9.50

3rd speed rpm : 550  
 travel mm : 3.10...3.70

4th speed rpm : 350  
 travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 800  
 Aneroid pressure h: 800  
 Del.quantity : 99.0...101.0  
 1000 : (97.0...103.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 43...48

### Testing:

1st rack travel in: 10.00  
Speed rpm : 1270...1290  
2nd rack travel in: 4.00  
Speed rpm : 1380...1390  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control Lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

### CONSTANT REGULATION

Speed rpm : 360...450

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.70...10.80

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 280  
Rack travel in m: 10.80...11.10  
3rd pressure hPa : 800  
Rack travel in m: 11.00...11.10

### START CUT-OUT

Speed 1/min : 180 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 101.0...105.0  
1000 s: (99.0...107.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 84.0...86.0  
1000 s: (82.0...88.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1270...1290

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 T  
Edition : 09.12.88  
Replaces : 19.02.88  
Test oil : ISO-4113

Combination no. : 0 403 446 198

Injection pump  
Pump designation : PES6MW100/32ORS1160  
EP type number : 0 413 406 147  
Governor  
Governor design. : RQV350...1200MW46-16  
Governor no. : 0 420 083 147

Customer spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 176.4  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.6

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 800

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...49

### Testing:

1st rack travel in: 11.30  
Speed rpm : 1260...1280  
2nd rack travel in: 4.00  
Speed rpm : 1385...1395  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.50...6.60

### CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 800  
Pressure hPa : 180  
Rack travel mm : 10.30...10.40

### Measurement

Speed 1/min : 800

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 480  
Rack travel in m: 11.80...12.10  
3rd pressure hPa : 800  
Rack travel in m: 12.30...12.40

### START CUT-OFF

Speed 1/min : 180 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (118.0...126.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 80.0...82.0  
1000 s: (78.0...84.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1260...1280

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.50...6.60  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 T 1  
Edition : 09.12.88  
Replaces : 06.04.88  
Test oil : ISO-4113

Combination no. : 0 403 446 199

Injection pump  
Pump designation : PES6MM100/320RS1160  
EP type number : 0 413 406 147  
Governor  
Governor design. : RQV350...1200MW46-17  
Governor no. : 0 420 083 148

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 154.5  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 800

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...49

### Testing:

1st rack travel in: 10.30  
Speed rpm : 1260...1280  
2nd rack travel in: 4.00  
Speed rpm : 1375...1385  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

### CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 190  
Rack travel mm : 10.60...10.70

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 290  
Rack travel in m: 10.90...11.20  
3rd pressure hPa : 800  
Rack travel in m: 11.30...11.40

### START CUT-OUT

Speed 1/min : 180 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 104.0...108.0  
1000 s: (102.0...110.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 75.5...77.5  
1000 s: (73.5...79.5)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1260...1280

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R25  
Edition : 09.12.88  
Replaces : 27.10.88  
Test oil : ISO-4113

Combination no. : 0 403 446 213

Injection pump  
Pump designation : PES6MM100/320RS1112  
EP type number : 0 413 406 108  
Governor  
Governor design. : RQV350...1300MW72-4  
Governor no. : 0 420 083 170

Customer-spec. information  
Customer : NAVISTAR

Engine : DT-466

1st version kW : 154.5  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.5...5.6  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1460  
travel mm : 9.10...9.50  
2nd speed rpm : 1350  
travel mm : 8.30...8.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 800  
Del.quantity : 103.0...105.0  
1000 : (101.0...107.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 43...51

#### Testing:

1st rack travel in: 9.80  
Speed rpm : 1365...1385  
2nd rack travel in: 4.00  
Speed rpm : 1470...1480  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.50...5.60

#### CONSTANT REGULATION

Speed rpm : 390...480

#### START CUT-OUT

Speed 1/min : 180 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 800  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 105.0...109.0  
1000 s: (103.0...111.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1365...1385

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350

B04

Rack travel in mm : 5.50...5.60  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 T 2  
Edition : 09.12.88  
Replaces : 04.11.88  
Test oil : ISO-4113

Combination no. : 0 403 446 214

Injection pump  
Pump designation : PES6MW100/320RS1160  
EP type number : 0 413 406 147  
Governor  
Governor design. : RQV350...1300MW46-18  
Governor no. : 0 420 083 171

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1460  
travel mm : 9.10...9.50

2nd speed rpm : 1350  
travel mm : 8.30...8.50

3rd speed rpm : 550  
travel mm : 3.10...3.70

4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 800

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1355...1375  
2nd rack travel in: 4.00  
Speed rpm : 1475...1485  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 800  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 165  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 360  
Rack travel in m: 11.20...11.50

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 1300  
Del.quantity cm3/ : 111.5...114.5  
1000 s: (109.0...117.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 73.0...75.0  
1000 s: (71.0...77.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1355...1375

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than  $n = 500$  1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 61  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 215  
Injection pump  
Pump designation : PES6MW100/720RS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RQV300...1300MW50-5  
Governor no. : 0 420 083 187

Customer-spec. information  
Customer : DB

Engine : OM 366 LA

1st version kW : 146.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:

1st rack travel in: 11.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 300  
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 230  
Rack travel in m: 10.90...11.20  
3rd pressure hPa : 700  
Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 74.0...77.0  
1000 s: (71.5...79.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 51.0...53.0  
1000 s: (49.0...55.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 55  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 216  
 Injection pump  
 Pump designation : PES6MW100/720RS1144-1  
 EP type number : 0 413 406 159  
 Governor  
 Governor design. : RQV300...1400MW48-8  
 Governor no. : 0 420 083 175

Customer-spec. information  
 Customer : DB

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
 travel mm : 9.10...9.50

2nd speed rpm : 1450  
 travel mm : 8.30...8.50

3rd speed rpm : 500  
 travel mm : 2.50...3.10

4th speed rpm : 300  
 travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.50...8.70

TORQUE CONTROL  
Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 950  
Rack travel in m: 11.70...11.90  
4th speed rpm : 1200  
Rack travel in m: 10.80...11.10

#### START CUT-OUT

Speed 1/min : 200 (230)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.50...8.70  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 56  
 Edition : 22.12.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 217  
 Injection pump  
 Pump designation : PES6MM100/72ORS1144-  
 1  
 EP type number : 0 413 406 159  
 Governor  
 Governor design. : RQV300...1300MW48-9  
 Governor no. : 0 420 083 176

Customer spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1440

travel mm : 9.30...9.70

2nd speed rpm : 1350

travel mm : 8.60...8.80

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.9

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 800  
Rack travel in m: 11.50...11.80  
3rd speed rpm : 585  
Rack travel in m: 12.00...12.20  
4th speed rpm : 1100  
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 75.5...78.5  
1000 s: (73.0...81.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 585  
Del.quantity cm<sup>3</sup>/ : 68.5...71.5  
1000 s: (66.0...74.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 59  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 219  
Injection pump  
Pump designation : PES6MM100/720RS1120  
EP type number : 0 413 406 112  
Governor  
Governor design. : RQV300...1300MW59-1  
Governor no. : 0 420 083 181

Customer-spec. information  
Customer : DB

Engine : OM366LA

1st version kW : 141.7  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 0.70...1.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1325

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 320...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 310  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 280  
Rack travel in m: 11.20...11.50  
3rd pressure hPa : 700  
Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 75.5...78.5  
1000 s: (73.0...81.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 47.0...49.0  
1000 s: (45.0...51.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MTU 22,4 e  
Edition : 2.3.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 406 036 027  
Injection pump  
Pump designation : PE6ZWM120/410/3RS28/  
2  
EP type number : 0 416 026 002  
Governor  
Governor design. : RQU300/700ZWA42L  
Governor no. : 0 422 404 010

Customer-spec. information  
Customer : MTU

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 027

Outside diameter  
x Wall thickness  
x Length mm : 8,00X2,00X1500

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 12.00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 00.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 600  
Rack travel in mm : 18.00  
Del.quantity cm3/ : 33.6...34.2  
100 s: (33.3...34.5)  
Spread cm3 : 1.0  
100 s: (1.5)

2nd speed rpm : 600  
Rack travel in mm : 6.00  
Del.quantity cm3/ : 7.9...9.9  
100 s: (7.5...10.3)  
Spread cm3 : 1.1  
100 s: (1.6)  
3rd speed rpm : 250  
Rack travel in mm : 6.00  
Del.quantity cm3/ : 4.0...5.6  
100 s: (3.6...6.0)  
Spread cm3 : 1.0  
100 s: (1.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 55...61  
Speed rpm : 450  
Rack travel in mm : 22.00

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 450  
Rack travel in mm : 22.0

Testing:  
1st rack travel in: 21.00  
Speed rpm : 705...720  
2nd rack travel in: 4.00  
Speed rpm : 765...795  
4th rack travel in: 810  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.00

Testing:

Speed rpm : 225  
Minimum rack trave: 12.00  
Speed rpm : 375  
Rack travel in mm : 2.00...3.50  
Rack travel in mm : 2.75  
Speed rpm : 355...395  
Speed rpm : 700  
Maximum rack trave: 2.00  
Rack travel in mm : <0.01  
Speed rpm : 720...740

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 21.00  
Speed rpm : 705...720

Remarks:  
Full-load delivery is set on engine  
according to engine test report.

Stamp dimension "0". Control-rod  
travel "0" corresponds to 1.0 mm  
clearance of the control-collar  
capsule from the end-face stop plate.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MTU 31,7 j  
Edition : 3.3.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 406 038 999  
Injection pump  
Pump designation : PEV8ZWM160/120RS1040  
EP type number : 0 416 068 999  
Governor  
Governor design. : RQU425...600/1300ZWA  
62-2  
Governor no. : 0 422 405 020

Customer-spec. information  
Customer : MTU

Engine : MB 871

## TEST BENCH REQUIREMENTS

Test oil  
Outlet temp, °C : 42...45

Overflow valve : -

Overflow  
quantity min. 1/h: 600...720

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 069

Outside diameter  
x Wall thickness  
x Length mm : 8,00X2,00X1500

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60  
(2.45...2.65)  
Rack travel in mm : 12.00  
Firing order : 8-2-1-6-4-3-5-7

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1300  
Rack travel in mm : 9.00  
Del.quantity cm3/ : 26.5...27.9 \*  
100 s : (26.2...28.2)  
Spread cm3 : 1.6  
100 s : (2.4)

2nd speed rpm : 425  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 8.0...9.0  
100 s : (-)  
Spread cm3 : 1.6  
100 s : (-)

1st speed rpm : 1300  
Rack travel in mm : 9.00  
Del.quantity cm3/ : 25.1...26.5\*\*  
100 s : (24.8...26.8)  
Spread cm3 : 1.6  
100 s : (2.4)  
2nd speed rpm : 425  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 6.4...7.4  
100 s : (-)  
Spread cm3 : 1.6  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 45...55  
Speed rpm : 800  
Rack travel in mm : 12.00...12.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1300  
Del.quantity : 450.0...454.0 \*  
1000 : (447.0...457.0)  
Spread cm3 : 8.0  
1000 : (12.0)  
2nd version  
Speed rpm : 1300  
Del.quantity cm3/ : 436.0...440.0\*\*  
1000 s : (433.0...443.0)

Spread cm<sup>3</sup> : 8.0  
1000 s: (12.0)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...58

#### Testing:

1st rack travel in: 13.80  
Speed rpm : 1325...1340  
2nd rack travel in: 4.00  
Speed rpm : 1420...1460  
3rd rack travel in: <0.01  
Speed rpm : 1460...1520

#### LOW IDLE 1

Control lever  
position degrees: 13...19  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 6.50...6.70  
Speed rpm : 300  
Rack travel in mm : 11.00...12.00  
Rack travel in mm : 3.70  
Speed rpm : 480...520  
Rack travel in mm : <0.01  
Speed rpm : 540...615

#### CONSTANT REGULATION

Speed rpm : 800...1300

#### BREAKAWAY

1st version  
Speed rpm : 1325...1380

#### Remarks:

\* = Bank A = cyl. 1-3-6-8

\*\* = Bank B = cyl. 2-4-5-7

Note mounting and test instructions  
KH/VSK 40 JP 1.

Set with adjusting gauge KDEP 1533.

Inlet pressure 3 bar with overflow  
quantity 10...12 l/min (measured at  
return).

Instead of overflow valve, connect a  
hand valve of minimum nominal size  
1/2" into the return.

Overflow quantity as well as inlet  
pressure must be observed precisely.  
Note further that the calibrating-

oil temperature 42°...45° C must be  
measured at the return.

Set intermediate-speed stop at  
00 l/min

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 j  
Edition : 3.3.89  
Replaces : 7.86  
Test oil : ISO-4113  
Combination no. : 9 400 230 047  
Injection pump  
Pump designation : PES6A95D410RS2561  
Governor  
Governor design. : RSV600...1100A2B2049  
-1L

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 413 385 007

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1.85...1.95  
: (1.80...2.00)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 10.70...10.80  
Del.quantity cm3/ : 10.7...10.9  
100 s: (10.4...11.2)  
Spread cm3 : 0.3  
100 s: (-)

2nd speed rpm : 600  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 1.2...1.6  
100 s: (1.0...1.8)  
Spread cm3 : 0.3  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 107.0...109.0  
1000 : (104.0...112.0)  
Spread cm3 : 3.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever

position degrees: 25...33  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 4.6

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 600  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 720...780

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 950  
Rack travel in m: 11.45...11.65

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 950  
Del.quantity cm3/ : 120.0...124.0  
1000 s: (118.0...126.0)  
Spread cm3 : 3.0  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...185.0  
1000 s: (-)  
Rack travel in mm : 21.00

#### HIGH IDLE

1st version  
Speed rpm : 1200  
Rack travel in mm : 19.0...29.0  
Del.quantity cm3/ : (-)

#### LOW IDLE

Speed rpm : 600  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (-)

#### Remarks:

: JOHN DEERE # RE10473  
Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 6  
Edition : 3.3.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 230 092  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
-2  
Governor  
Governor design. : RQV350...1100AB1216R

Customer-spec. information  
Customer : CDC

Engine : 6 CT 8.3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm<sup>3</sup> : 0.35

100 s: (0.6)

2nd speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (-)

Spread cm<sup>3</sup> : 0.35  
100 s: (0.55)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100  
Aneroid pressure h: 600  
Del.quantity : 127.0...129.0  
1000 : (125.0...131.0)  
Spread cm<sup>3</sup> : 3.5  
1000 : (6.0)

## RATED SPEED

### 1st version

Control lever  
position degrees: 61.5...66.5

### Testing:

1st rack travel in: 11.70  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1265...1295  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.8  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

Rack travel in mm : 2.00  
Speed rpm : 525...585

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 850  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 750  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 340  
Rack travel mm : 12.35...12.45

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 190  
Rack travel in m: 10.60...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del.quantity cm3/ : 133.0...137.0  
1000 s: (131.0...139.0)  
Spread cm3 : 3.5  
1000 s: (6.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 69.5...73.5  
1000 s: (67.5...75.5)  
Spread cm3 : 3.5  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0  
1000 s: (155.0)  
Rack travel in mm : 21.00

#### LOW IDLE

Speed rpm : 350  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.5  
1000 s: (-)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 j  
Edition : 01.09.88  
Replaces : 15.6.88  
Test oil : ISO-4113

Combination no. : 9 400 230 096

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV425...900A4C2213-1R  
Governor no. : 9 420 234 136

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CTI-8.3 L

1st version kW : 154.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
(2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 830

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 13.5...13.7

100 s: (13.3...13.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 5.5...5.7  
Del.quantity cm3/ : 1.2...1.6  
100 s: (0.9...1.8)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 830  
Del.quantity : 135.0...137.0  
1000 : (133.0...139.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 12.40  
Speed rpm : 925...935

2nd rack travel in: 4.00  
Speed rpm : 960...990  
4th rack travel in: 1030  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 435...495

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C # 3908844

Set shutoff stop 1.5...2.0 mm before  
shutoff.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 j 1  
 Edition : 15.06.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 096DA  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV425...900A4C2213-1R  
 Governor no. : 9 420 234 136  
 Cust. part no. : 3908845  
 Customer-spec. information  
 Customer : C.D.C.  
 Engine : 6CT-I

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 14.00...14.10  
 Del.quantity cm3/ : 14.2...14.4  
 100 s: (14.0...14.6)  
 Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 425.0  
 Rack travel in mm : 6.0...6.2  
 Del.quantity cm3/ : 1.8...2.2  
 100 s: (1.5...2.4)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del.quantity : 142.5...144.5  
 1000 : (140.5...146.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 37...45

Testing:  
 1st rack travel in: 13.00

Speed rpm : 795...805  
2nd rack travel in: 4.00  
Speed rpm : 825...855  
3rd rack travel in: 4.00  
Speed rpm : 830...860

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 795...805

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

#### APPLICATION

Generator

B26

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 k  
 Edition : 15.06.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 102  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050A0C2216  
 R  
 Governor no. : 9 420 234 146

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 141.7  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

B27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.10...11.20  
 Del.quantity cm3/ : 10.0...10.2  
 100 s: (9.8...10.4)  
 Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm3/ : 1.8...2.2  
 100 s: (1.5...2.4)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 100.5...102.5  
 1000 : (98.5...104.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 43...51

Testing:

1st rack travel in: 10.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 25...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 495...555

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 126.0...130.0  
1000 s: (124.0...132.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 18.0...22.0  
1000 s: (15.5...24.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b  
Edition : 20.12.88  
Replaces : 1.9.88  
Test oil : ISO-4113

Combination no. : 9 400 230 103

Injection pump  
Pump designation : PES6A100D410RS2691-2  
EP type number : 9 410 230 028  
Governor  
Governor design. : RQV350...1100AB1227R  
Governor no. : 9 420 231 015

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.8...2.2  
100 s: (1.5...2.4)

Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1100  
travel mm : 7.70...7.70

2nd speed rpm : 1150  
travel mm : 8.00...8.60

3rd speed rpm : 1290  
travel mm : 9.50...10.10

4th speed rpm : 350  
travel mm : 1.20...1.60

5th speed rpm : 600  
travel mm : 3.90...4.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 130.5...132.5  
1000 : (128.5...134.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1265...1295  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 250  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 420...480

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 535  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 390  
Rack travel in m: 10.70...11.10

#### START CUT-OUT

Speed 1/min : 260 (280)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -

CO2

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 79.0...83.0  
1000 s: (77.0...85.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 15.30...15.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks: : CDC # 3912645

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at 7° after  
start of delivery.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 k 1  
Edition : 15.06.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 230 106

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050A0C2216  
-1R  
Governor no. : 9 420 234 154

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 141.7  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

C03

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.8...6.0  
Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control Lever

position degrees: 42...50

Testing:

1st rack travel in: 10.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 134.0...138.0  
1000 s: (132.0...140.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (132.0...158.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a 6  
Edition : 20.12.88  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 9 400 230 109

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 030  
Governor  
Governor design. : RSV450...1100A2C2190  
-21R  
Governor no. : 9 420 234 164

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 117.1  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

C05

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 89.0...91.0  
1000 : (87.0...93.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 47...55

Testing:

1st rack travel in: 9.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 525...585

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 90.5...94.5  
1000 s: (88.5...96.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90

C06

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3911541

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a 7  
Edition : 20.12.88  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4

EP type number : 9 410 230 030  
Governor  
Governor design. : RSV450...1100ADC2190  
-22R

Governor no. : 9 420 234 173

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

C07

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
(2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 12.10...12.20  
Del.quantity cm<sup>3</sup>/ : 11.8...12.0  
100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 450.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 118.5...120.5  
1000 : (116.5...122.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 500...560

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 133.0...137.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3911542  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a 8  
Edition : 20.12.88  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4

EP type number : 9 410 230 030  
Governor  
Governor design. : RSV450...1100AOC2190  
-23R

Governer no. : 9 420 234 174

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

C09

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 535...595

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 110.5...114.5  
1000 s: (108.5...116.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 450

C10

Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3911545

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 1° cam angle  
after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 5,9 b  
 Edition : 20.12.88  
 Replaces : 30.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 120

Injection pump  
 Pump designation : PES6A95D320RS2750  
 EP type number : 0 410 896 906  
 Governor  
 Governor design. : RGV350...1350AB1236R  
 Governor no. : 9 420 231 021

Customer-spec. information  
 Customer : NAVISTAR

Engine : MARS DTA360

1st version kW : 134.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm3/ : 1.5...1.9  
 100 s: (1.2...2.1)  
 Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
 travel mm : 8.50...8.50  
 2nd speed rpm : 1500  
 travel mm : 9.30...9.50  
 3rd speed rpm : 350  
 travel mm : 1.00...1.00  
 4th speed rpm : 450  
 travel mm : 1.90...2.40  
 5th speed rpm : 250  
 travel mm : 0.10...0.50

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1535  
 Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900

Del.quantity : 73.0...75.0  
1000 : (71.0...77.0)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 45...53

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1415...1445  
2nd rack travel in: 4.00  
Speed rpm : 1530...1540  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 250  
Minimum rack trave: 7.80  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 250  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 190  
Rack travel in m: 9.30...9.70

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version

C12

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 57.0...61.0  
1000 s: (55.0...63.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1415...1445

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 a3  
Edition : 20.12.88  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 9 400 231 039

Injection pump  
Pump designation : PES6P110A720RS370  
EP type number : 0 412 016 052  
Governor  
Governor design. : RSV450...1050POA465  
Governor no. : 9 420 234 180

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619A

1st version kW : 201.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.50

C13

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 12.40...12.50

---

Del.quantity cm3/ : 17.4...17.6

---

100 s: (17.1...17.9)

---

Spread cm3 : 0.4

---

100 s: (0.7)

---

2nd speed rpm : 450.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm3/ : 1.9...2.5  
100 s: (1.7...2.7)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 900  
Del.quantity : 174.0...176.0  
1000 : (171.0...179.0)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 47...55

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00

Speed rpm : 1220...1250  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 25...33  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 600...660

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 650  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 280  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 480  
Rack travel in m: 12.80...13.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm3/ : 198.5...201.5  
1000 s: (195.0...205.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : -  
1000 s: (123.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...210.0  
1000 s: (165.0...215.0)  
Rack travel in mm : 20.00...21.00

#### HIGH IDLE

1st version  
Speed rpm : 1170  
Rack travel in mm : 7.40...7.60

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (17.0...27.0)  
Spread cm3 : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE29146

Starting/full-load transition speed  
from holding magnet = 400 1/min.

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

Screw in torque-control-spring  
retainer to make contact at 650 l/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 g 3  
Edition : 20.12.88  
Replaces : 11.85  
Test oil : ISO-4113  
  
Combination no. : 9 400 231 084  
  
Injection pump  
Pump designation : PES6P11DA720RS3083-1  
EP type number : 9 410 231 027  
Governor  
Governor design. : RSV425...1100P2A489  
Governor no. : 9 420 234 138

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 A

1st version kW : 161.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 456 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 425.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.5

100 s: (0.8...1.8)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 137.5...139.5

1000 : (134.5...142.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control Lever

position degrees: 46...54

Testing:

1st rack travel in: 11.00

Speed rpm : 1155...1165

2nd rack travel in: 4.00

Speed rpm : 1230...1260  
3rd rack travel in: 4.00  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 655...715

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 700  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.10...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.40...11.80  
2nd pressure hPa : 375  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 900  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 155.5...159.5  
1000 s: (152.5...162.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (102.0...112.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1155...1165

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 20.00...21.00

#### HIGH IDLE

1st version  
Speed rpm : 1200  
Rack travel in mm : 7.30...7.50

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 10.5...15.5  
1000 s: (8.0...18.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE23748

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 400 1/min.

Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,4 a 7  
Edition : 6.3.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 231 115  
Injection pump  
Pump designation : PES8P100A921/5RS286  
Governor  
Governor design. : RQV350...1200PA643-1  
K

Customer-spec. information  
Customer : IHC

Engine : DVT 800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 040

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 9 681 230 713

Outside diameter  
x Wall thickness  
x Length mm : 6,35X1,57X1025,4

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.70...2.80  
(2.65...2.85)  
Rack travel in mm : 9.50  
Firing order : 1-8-4-2-7-3-6-5

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 9.50...9.60  
Del.quantity cm3/ : 10.5...10.7  
100 s : (-)  
Spread cm3 : 0.4  
100 s : (-)

2nd speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 1.9...2.3  
100 s : (-)  
Spread cm3 : 0.5  
100 s : (-)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h : 930  
Del.quantity : 105.5...107.5  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 59.5...64.5

Testing:  
1st rack travel in: 8.50  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1370  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 10.5...15.5  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0  
Speed rpm : 350  
Rack travel in mm : 4.80...5.20  
Rack travel in mm : 2.00

Speed rpm : 650...710  
Speed rpm : 285  
Maximum rack travel: 7.00

#### CONSTANT REGULATION

Speed rpm : 400...460

#### TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.50...9.60

2nd speed rpm : 900

Rack travel in m: 10.75...10.85

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 800

Pressure hPa : 160 \*

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 930

Speed rpm : 900

Del.quantity cm<sup>3</sup>/ : 117.0...123.0

1000 s: (-)

Spread cm<sup>3</sup> : 4.0

1000 s: (-)

Aneroid pressure h: -

Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 82.0...90.0

1000 s: (-)

Spread cm<sup>3</sup> : 4.0

1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.50

Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 199.0...239.0

1000 s: (-)

#### LOW IDLE

Speed rpm : 350

C18

Rack travel in mm : 19.0...23.0  
Del.quantity cm<sup>3</sup>/ : (-)

Remarks:

\* Start of LDA (manifold-pressure  
compensator) movement

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 g 4  
Edition : 20.12.88  
Replaces : 17.10.88  
Test oil : ISO-4113  
Combination no. : 9 400 231 196  
Injection pump  
Pump designation : PES6P110A720RS3083  
EP type number : 9 410 231 009  
Governor  
Governor design. : RSV400...1050P2A488-3  
Governor no. : 9 420 234 130

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 AF

1st version kW : 167.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
: (3.40...3.60)

Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 12.60...12.70  
Del.quantity cm<sup>3</sup>/ : 14.9...15.1  
100 s: (14.7...15.4)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

2nd speed rpm : 400.0  
Rack travel in mm : 6.6...6.8  
Del.quantity cm<sup>3</sup>/ : 1.3...1.8  
100 s: (1.1...2.1)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1200  
Del.quantity : 149.5...151.5  
1000 : (147.0...154.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1095...1105

2nd rack travel in: 4.00  
Speed rpm : 1190...1200  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 660...720

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 700  
Rack travel in m: 13.80...14.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.80...14.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 665  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 415  
Rack travel in m: 11.20...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 180.0...185.0  
1000 s: (177.5...187.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 91.0...95.0  
1000 s: (88.0...98.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 156.0...176.0  
1000 s: (152.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 13.5...18.5  
1000 s: (11.0...21.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE25013

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 12,75° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 400 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1a12  
 Edition : 20.12.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 231 214  
 Injection pump  
 Pump designation : PES6P110A720RS370  
 EP type number : 0 412 016 052  
 Governor  
 Governor design. : RSV500...900PO/452-1  
 Governor no. : 9 420 234 123

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6619 A

1st version kW : 164.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 16.0...16.2

100 s: (15.7...16.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 500.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.9...2.5

100 s: (1.6...2.7)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 160.0...162.0

1000 : (157.5...164.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.60

Speed rpm : 945...955

3rd rack travel in: 6.20

Speed rpm : 985...1015  
4th rack travel in: 1100  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 610...670

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 650  
Rack travel in m: 12.40...12.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 900  
Rack travel mm : 12.40...12.60

#### Measurement

Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 420  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 575  
Rack travel in m: 12.30...12.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm3/ : 176.5...179.5  
1000 s: (174.0...182.0)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm3/ : 143.0...147.0  
1000 s: (140.0...150.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 945...955

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (185.0...215.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

1st version  
Speed rpm : 1000  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 23.5...28.5  
1000 s: (21.0...31.0)

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (16.5...27.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE21153

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

Screw in torque-control-spring  
retainer to make contact at 650 l/min.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 C1  
Edition : 03.02.89  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 6/10F1500 R209-3  
Type number : 0 460 406 062

Customer-specific information  
Customer : ONAN

Engine : L634TA HD

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.2  
(from BDC) : ±0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value mm: 3.8...4.2

## Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value bar: 5.1...5.7

## Full-load del. with charge press.:

Speed 1/min: 1400  
Charge press. hPa: 800  
Del.quantity cm3/  
1000H.: 56.5...57.5  
Dispersion cm3/ : 3.0  
1000H : -

## Full-load del. w/out charge press.:

Speed 1/min : 700  
Del.quantity cm3/  
1000H.: 39.5...40.5

## Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 13.0...17.0  
Dispersion cm3/ : 3.0  
1000H.: -

## Full-load speed regulation:

Speed 1/min: 1640  
Charge press. hPa: 800  
Del.quantity cm3/  
1000H: 10.0...14.0

## Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 37.0

## Inspection-pump test specifications Test specifications in parentheses

## Timing-device characteristic:

1st speed 1/min: 800  
Charge press. hPa: 800  
TD travel mm: 0.9...1.7  
mm: (0.6...2.0)

2nd speed 1/min: 1100  
Charge press. hPa: 800  
TD travel mm: 2.2...2.8  
mm: (1.8...3.2)

3rd speed 1/min: 1500  
Charge press. hPa: 800  
TD travel mm: 3.8...4.2  
mm: (3.3...4.7)

## Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 800

Supply-pump  
 pressure bar: 2.3...2.9  
 2nd speed 1/min: 1100  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 3.8...4.4  
 3rd speed 1/min: 1500  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 5.1...5.7

Overflow quantity at overflow valve:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Overflow : 41...83  
 quantity cm<sup>3</sup>/10s: (26...98)  
 2nd speed 1/min: 1500  
 Charge press. hPa: 800  
 Overflow : 55...138  
 quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
 Charge-air pressure-setting  
 point hPa: 400  
 LDA stroke mm: 6,5  
 Del.quantity cm<sup>3</sup>/: 47.5...48.5  
 1000H.: (45,7...50,3)  
 2nd speed 1/min: 1700  
 Charge press. hPa: 800  
 Del.quantity cm<sup>3</sup>/: 0.0...6.0  
 1000H.: -  
 3rd speed 1/min: 1640  
 Charge press. hPa: 800  
 Del.quantity cm<sup>3</sup>/: 10.0...14.0  
 1000H.: (8.0...16.0)  
 4th speed 1/min: 1580  
 Charge press. hPa: 800  
 Del.quantity cm<sup>3</sup>/: 33.0...41.0  
 1000H.: -  
 5th speed 1/min: 1500  
 Charge press. hPa: 800  
 Del.quantity cm<sup>3</sup>/: 53.0...56.0  
 1000H.: (52.2...56.8)  
 6th speed 1/min: 1400  
 Charge press. hPa: 800  
 Del.quantity cm<sup>3</sup>/: 56.5...57.5  
 1000H.: (54.7...59.3)  
 7th speed 1/min: 700  
 Charge press. hPa: 800  
 Del.quantity cm<sup>3</sup>/: 56.0...59.0  
 1000H.: -  
 8th speed 1/min: 700  
 Charge press. hPa: -  
 Del.quantity cm<sup>3</sup>/: 39.5...40.5  
 1000H.: (37.7...42.3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1500  
 Del.quantity cm<sup>3</sup>/: 0..3  
 1000H.: -

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del.quantity cm<sup>3</sup>/: 0.0...3.0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
 Del.quantity cm<sup>3</sup>/: 26.5...33.5  
 1000H.: -  
 2nd speed 1/min: 400  
 Del.quantity cm<sup>3</sup>/: 13,0..17,0  
 1000H.: (11,0..18,0)  
 3rd speed 1/min: 450  
 Del.quantity cm<sup>3</sup>/: 0,0...6,0  
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 220  
 Del.quantity cm<sup>3</sup>/: -  
 ind. 1000H: 37.0

2nd speed 1/min: 300  
 Del.quantity cm<sup>3</sup>/: -  
 max. 1000H : 37.0

Shutoff electromagnet:

Cut-in  
 min. voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5.6...6.0
MS	mm	: 0.6...1.0
SVS max.	mm	: 1.9
XK	mm	: 20,0...22,0
XL	mm	: 12,4...15,8

Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 3,9L  
Edition : 31.01.89  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R310-1  
Type number : 0 460 424 043

Customer-specific information  
Customer : CASE

Engine : 4BT -3.9

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,3  
(from BDC): +0,02(0,04)

Start of delivery block  
Piston stroke mm: 1,55  
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750  
Charge press. hPa: 1000

C25

Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value bar: 4,5...5,1

Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 82,5...83,5  
Dispersion cm3/ : 4,0  
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 49,5...50,5

Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 8,5...14,5  
Dispersion cm3/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1170  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H: 52,0...58,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 45,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
TD travel mm: 1,6...2,4  
mm: (1,3...2,7)

2nd speed 1/min: 750  
Charge press. hPa: 1000  
TD travel mm: 3,3...3,7  
mm: (2,8...4,2)

3rd speed 1/min: 1100

Charge press. hPa: 1000  
TD travel mm: 4,5...5,3  
mm: (4,2...5,6)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3,4...4,0  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4,5...5,1  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5,9...6,5

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 650  
Charge-air pressure-setting point hPa: 325  
LDA stroke mm: 5,0  
Del.quantity cm<sup>3</sup>/: 72,0...73,0  
1000H.: (68,5...76,5)  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1250  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0,0...15,0  
1000H.: -  
4th speed 1/min: 1200  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15,0...55,0  
1000H.: -  
5th speed 1/min: 1170  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 52,0...58,0  
1000H.: (49,0...61,0)  
6th speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 67,0...69,0  
1000H.: (65,5...71,5)  
7th speed 1/min: 900  
Charge press. hPa: 1000

Del.quantity cm<sup>3</sup>/: 74,0...79,0  
1000H.: (72,5...80,5)  
8th speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 82,5...83,5  
1000H.: (80,0...86,0)  
9th speed 1/min: 500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 85,0...93,0  
1000H.: -  
10th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 49,5...50,5  
1000H.: (46,0...54,0)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

#### Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 33,5...41,5  
1000H.: -  
2nd speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 8,5...14,5  
1000H.: (6,5...16,5)  
3rd speed 1/min: 550  
Del.quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 250  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H.: 75,0

2nd speed 1/min: 400  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H.: 75,0

#### Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0



Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,3
XK	mm	: 18,1...20,8
XL	mm	: 9,9...13,3

Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N11  
Edition : 02.02.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1050 R226-10  
Type number : 0 460 424 053

Customer-specific information  
Customer : CDC

Engine : 4 BT 390 IND

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02$

Start of delivery block  
Piston stroke mm: 1.8  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900  
Setting value mm: 2.3...2.7

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4.1...4.7

Full-load del. w/out charge press.:

Speed 1/min : 900  
Del.quantity cm<sup>3</sup>/  
1000H.: 69.0...70.0  
Dispersion cm<sup>3</sup>/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 10.0...12.0  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1110  
Del.quantity cm<sup>3</sup>/  
1000H.: 49.0...55.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 1.3...2.1  
mm: (1.0...2.4)  
2nd speed 1/min: 900  
TD travel mm: 2.3...2.7  
mm: (1.8...3.2)  
3rd speed 1/min: 1050  
TD travel mm: 2.8...3.6  
mm: (2.5...3.9)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2.3...2.9  
2nd speed 1/min: 900  
Supply-pump  
pressure bar: 4.1...4.7  
3rd speed 1/min: 1050

Supply-pump  
pressure bar: 4.8...5.4

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 1050  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200  
Del.quantity cm3/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1180  
Del.quantity cm3/: 0.0...15.0  
1000H.: -  
3rd speed 1/min: 1140  
Del.quantity cm3/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1110  
Del.quantity cm3/: 49.0...55.0  
1000H.: (46.0...58.0)  
5th speed 1/min: 1050  
Del.quantity cm3/: 66.0...69.0  
1000H.: (64.5...70.5)  
6th speed 1/min: 900  
Del.quantity cm3/: 69.0...70.0  
1000H.: (66.5...72.5)  
7th speed 1/min: 750  
Del.quantity cm3/: 72.0...76.0  
1000H.: (70.0...78.0)  
8th speed 1/min: 500  
Del.quantity cm3/: 72.0...80.0  
1000H.: (70.0...82.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm3/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm3/: 10.0...12.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 500

Del.quantity cm3/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm3/: -  
ind. 1000H.: 80.0

2nd speed 1/min: 240  
Del.quantity cm3/: -  
max. 1000H.: 80.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5.0...5.4
MS	mm	: 1.1...1.5
SVS max.	mm	: -
XK	mm	: -
XL	mm	: -

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 6,5K4  
Edition : 10.03.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1200 R235  
Type number : 0 460 426 079  
Customer Part-No. :

Customer-specific information  
Customer : STEYR

Engine : WD 612-04

Power k: 100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
pressure bar : 172...175

Perforated-plate  
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Setting value mm: 2,2...2,6

Supply-pump pressure:

Speed 1/min: 1100  
Setting value bar: 6,1...6,7

Full-load del. w/out charge press.:

Speed 1/min : 1000  
Del.quantity cm3/  
1000H.: 95,0...96,0  
Dispersion cm3/: 3,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 325  
Del.quantity cm3/  
1000H.: 18,0...22,0  
Dispersion cm3/: 3,5  
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1250  
Del.quantity cm3/  
1000H.: 61,0...67,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 90,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
TD travel mm: 0,8...1,4  
mm: (0,4...1,8)  
2nd speed 1/min: 1100  
TD travel mm: 2,2...2,6  
mm: (1,7...3,1)  
3rd speed 1/min: 1200  
TD travel mm: 2,7...3,3  
mm: (2,3...3,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 3,5...4,1  
2nd speed 1/min: 1100  
Supply-pump  
pressure bar: 6,1...6,7  
3rd speed 1/min: 1200  
Supply-pump  
pressure bar: 6,6...7,2

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1200  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery quant. and breakaway char.:

1st speed 1/min: 1350  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
2nd speed 1/min: 1300  
Del.quantity cm<sup>3</sup>/: 26,0...34,0  
1000H.: (25,0...35,0)  
3rd speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 61,0...67,0  
1000H.: (59,0...69,0)  
4th speed 1/min: 1200  
Del.quantity cm<sup>3</sup>/: 90,5...93,5  
1000H.: (89,0...95,0)  
5th speed 1/min: 1000  
Del.quantity cm<sup>3</sup>/: 95,0...96,0  
1000H.: (92,5...98,5)  
6th speed 1/min: 700  
Del.quantity cm<sup>3</sup>/: 88,8...91,2  
1000H.: (86,3...93,7)  
7th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 82,5...85,5  
1000H.: (80,3...87,7)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200  
Del.quantity cm<sup>3</sup>/: -  
1000H.: -

Idle delivery:

1st speed 1/min: 325  
Del.quantity cm<sup>3</sup>/: 18,0...22,0  
1000H.: (15,0...25,0)  
2nd speed 1/min: 370  
Del.quantity cm<sup>3</sup>/: 1,0...7,0  
1000H.: (0,0...9,0)  
3rd speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 170  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H.: 90,0

2nd speed 1/min: 350  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H.: 82,0

3rd speed 1/min: 250  
Del.quantity cm<sup>3</sup>/: -  
1000H.: -

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : 5,6...6,0  
SVS max. mm : 4,0

Remarks:

:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 C  
Edition : 03.02.89  
replaces : 29.07.87  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R240  
Type number : 0 460 426 084

Customer-specific information  
Customer : PERKINS

Engine : T6 60 CC TRU

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
pressure bar : 172...175

Perforated-plate  
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.25  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.0  
mm:  $\pm 0.02$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000

DO4

Setting value mm: 1.3...1.7

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 6.5...7.1

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 99.0...100.0  
Dispersion cm<sup>3</sup> : 5.0  
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del.quantity cm<sup>3</sup>/  
1000H.: 87.0...88.0

Low-idle speed regulation:

Speed 1/min: 300  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/  
1000H.: 16.5...20.5  
Dispersion cm<sup>3</sup> : 5.0  
1000H.: -

Full-load speed regulation:

Speed 1/min: 1450  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H: 47.0...53.0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 120.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
TD travel mm: 0.4...1.2  
mm: (0.1...1.5)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: 1.3...1.7  
mm: (0.8...2.2)

3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 2.0...2.8  
mm: (1.7...3.1)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.9...4.5  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.5...7.1  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.3...7.9

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 450  
LDA stroke mm: 6.3  
Del.quantity cm<sup>3</sup>/: 95.0...96.0  
1000H.: (92.5...98.5)  
2nd speed 1/min: 1550  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...7.0  
1000H.: -  
3rd speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 13.5...21.5  
1000H.: (10.5...24.5)  
4th speed 1/min: 1450  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 47.0...53.0  
1000H.: (44.0...56.0)  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 95.0...98.0  
1000H.: (93.5...99.5)  
6th speed 1/min: 1000  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 99.5...102.5  
1000H.: (98.0...104.0)  
7th speed 1/min: 700

Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 99.0...100.0  
1000H.: (96.5...102.5)  
8th speed 1/min: 700  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 87.0...88.0  
1000H.: (84.5...90.5)  
9th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 80.0...83.0  
1000H.: (78.5...84.5)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1300  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

#### Electr. shutoff:

Speed 1/min: 300  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 300  
Del.quantity cm<sup>3</sup>/: 16.5...20.5  
1000H.: (13.5...23.5)  
2nd speed 1/min: 350  
Del.quantity cm<sup>3</sup>/: 4.5...10.5  
1000H.: (2.5...12.5)  
3rd speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 0.0...2.6  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 95.0

2nd speed 1/min: 230  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 85.0

#### Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

#### Mounting and assembly dimensions:

#### Designation

K	mm	:	-
KF	mm	:	K-OT
MS	mm	:	0.6...1.0
SVS max.	mm	:	3.2
XK	mm	:	17.0...19.0
XL	mm	:	12.8...16.2

Remarks:



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6.0 C2  
 Compl. date: : -  
 Edition : 03.02.89  
 replaces : 19.04.88  
 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R240-2  
 Type number : 0 460 426 094

Customer-specific information  
 Customer : PERKINS

Engine : T6 60 CC TRU

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40...48  
 electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
 assembly : 1 688 901 020

Opening  
 pressure bar : 172...175

Perforated-plate  
 diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
 x Wall thickness : 2  
 x Length mm : 840

Start of delivery  
 Prestroke mm : 0.25  
 (from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
 Piston stroke mm: 1.0  
 mm:  $\pm 0.02$

Outlet : A

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

D07

Charge press. hPa: 1000  
 Setting value mm: 1.3...1.7

Supply-pump pressure:

Speed 1/min: 1100  
 Charge press. hPa: 1000  
 Setting value bar: 6.5...7.1

Full-load del. with charge press.:

Speed 1/min: 700  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/  
 1000H.: 99.0...100.0  
 Dispersion cm<sup>3</sup>/ : 5.0  
 1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 700  
 Del.quantity cm<sup>3</sup>/  
 1000H.: 87.0...88.0

Low-idle speed regulation:

Speed 1/min: 300  
 Charge press. hPa: -  
 Del.quantity cm<sup>3</sup>/  
 1000H.: 16.5...20.5  
 Dispersion cm<sup>3</sup>/: 5.0  
 1000H.: -

Full-load speed regulation:

Speed 1/min: 1450  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/  
 1000H: 47.0...53.0

Start:

Speed 1/min: 100  
 Charge press. hPa: -  
 Del.quantity : -  
 mind cm<sup>3</sup>/1000H.: 120.0

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 TD travel mm: 0.4...1.2  
 mm: (0.1...1.5)

2nd speed 1/min: 1100  
 Charge press. hPa: 1000

TD travel mm: 1.3...1.7  
mm: (0.8...2.2)  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 2.0...2.8  
mm: (1.7...3.1)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.9...4.5  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.5...7.1  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.3...7.9

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 450  
LDA stroke mm: 6.3  
Del.quantity cm<sup>3</sup>/: 95.0...96.0  
1000H.: (92.5...98.5)  
2nd speed 1/min: 1550  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...7.0  
1000H.: -  
3rd speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 13.5...21.5  
1000H.: (10.5...24.5)  
4th speed 1/min: 1450  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 47.0...53.0  
1000H.: (44.0...56.0)  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 95.0...98.0  
1000H.: (93.5...99.5)  
6th speed 1/min: 1000  
Charge press. hPa: 1000

Del.quantity cm<sup>3</sup>/: 99.5...102.5  
1000H.: (98.0...104.0)  
7th speed 1/min: 700  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 99.0...100.0  
1000H.: (96.5...102.5)  
8th speed 1/min: 700  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 87.0...88.0  
1000H.: (84.5...90.5)  
9th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 80.0...83.0  
1000H.: (78.5...84.5)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1300  
Del.quantity cm<sup>3</sup>/: 0...3  
1000H.: -

#### Idle delivery:

1st speed 1/min: 300  
Del.quantity cm<sup>3</sup>/: 16.5...20.5  
1000H.: (13.5...23.5)  
2nd speed 1/min: 350  
Del.quantity cm<sup>3</sup>/: 4.5...10.5  
1000H.: (2.5...12.5)  
3rd speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 0.0...2.6  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 95.0  
2nd speed 1/min: 230  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 85.0

#### Mounting and assembly dimensions:

#### Designation

K	mm	: -
KF	mm	: K-OT
MS	mm	: 0.6...1.0
SVS max.	mm	: -
XK	mm	: 17.0...19.0
XL	mm	: 12.8...16.2

#### Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U14  
Edition : 01.02.89  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R232-2  
Type number : 0 460 426 111

Customer-specific information  
Customer : CUMMINS

Engine : 6 BT-5.9IND

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.06)$

Start of delivery block  
Piston stroke mm: 1.6  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000  
Charge press. hPa: 1000

D09

Setting value mm: 1.8...2.2

Supply-pump pressure:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value bar: 7.4...8.0

Full-load del. with charge press.:

Speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 67.5...68.5  
Dispersion cm<sup>3</sup> / : 4.0  
1000H.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del.quantity cm<sup>3</sup>/  
1000H.: 56.0...57.0  
Dispersion cm<sup>3</sup> / : 9.0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 340  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/  
1000H.: 10.0...12.0  
Dispersion cm<sup>3</sup> / : 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1170  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 44.5...50.5

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 65.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
TD travel mm: 0.7...1.5  
mm: (0.4...1.8)  
2nd speed 1/min: 1000  
Charge press. hPa: 1000

TD travel mm: 1.8...2.2  
mm: (1.3...2.7)  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: 2.4...3.2  
mm: (2.1...3.5)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.7...6.3  
2nd speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.1...7.7  
3rd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.4...8.0  
4th speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.9...8.5

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 400  
LDA stroke mm: 7.0  
Del.quantity cm<sup>3</sup>/: 66.0...67.0  
1000H.: (62.5...70.5)  
2nd speed 1/min: 1280  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1230  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...15.0  
1000H.: -  
4th speed 1/min: 1200  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
5th speed 1/min: 1170  
Charge press. hPa: 1000

Del.quantity cm<sup>3</sup>/: 44.5...50.5  
1000H.: (41.5...53.5)  
6th speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 64.5...67.5  
1000H.: (63.0...69.0)  
7th speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 67.5...68.5  
1000H.: (65.0...71.0)  
8th speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 69.0...73.0  
1000H.: (67.0...75.0)  
9th speed 1/min: 600  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 72.0...82.0  
1000H.: -  
10th speed 1/min: 600  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 56.0...57.0  
1000H.: (52.5...70.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 340  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 340  
Del.quantity cm<sup>3</sup>/: 10.0...12.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 70.0  
2nd speed 1/min: 480  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 70.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5.0...5.4
MS	mm	:	1.3...1.7
SVS max.	mm	:	1.0
XK	mm	:	21,8...23,8
XL	mm	:	11,7...15,1

Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U15  
Edition : 31.01.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R320  
Type number : 0 460 426 114

Customer-specific information  
Customer : CDC

Engine : 6 BT-590A

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Start of delivery block  
Piston stroke mm : 1.4  
mm :  $\pm 0.02(0.06)$   
Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1200

Setting value mm: 1.3...1.7  
KSB solenoid-operated  
valve volt: 12.0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6.8...7.4  
KSB solenoid-operated  
valve volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 75.5...76.5  
KSB solenoid-operated  
valve volt : 12.0  
Dispersion cm<sup>3</sup> / : 4.0  
1000H : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 51.0...52.0  
KSB solenoid-operated  
valve volt: 12.0  
Dispersion cm<sup>3</sup> / : 9.0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/  
1000H.: 5.5...9.5  
KSB solenoid-operated  
valve volt: 12.0  
Dispersion cm<sup>3</sup> / : 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 52.5...58.5  
KSB solenoid-operated  
valve volt: 12.0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60.0

KSB solenoid-operated  
valve volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450  
Charge press. hPa: -  
TD travel mm: 3.0...4.0  
mm: -

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0.5...1.3  
mm: (0.2...1.6)

KSB solenoid-operated  
valve volt: 12.0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1.3...1.7  
mm: (0.8...2.2)

KSB solenoid-operated  
valve volt: 12.0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2.2...3.0  
mm: (1.9...3.3)

KSB solenoid-operated  
valve volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4.1...4.7

KSB solenoid-operated  
valve volt: 12.0  
2nd speed 1/min: 1100  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 6.8...7.4

KSB solenoid-operated  
valve volt: 12.0  
3rd speed 1/min: 1250  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 7.5...8.1

KSB solenoid-operated  
valve volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -

KSB solenoid-operated  
valve volt: 12.0  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12.0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: -  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 68.0...69.0  
1000H.: (64.5...72.5)

2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -

3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 0.0...15.0  
1000H.: -

4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -

5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 52.5...58.5  
1000H.: (49.5...61.5)

6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 71.5...74.5  
1000H.: (70.0...76.0)

7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 75.5...76.5  
1000H.: (73.0...79.0)

8th speed 1/min: 750  
Charge press. hPa: 1200

KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 75.0...80.0  
1000H: (73.0...82.0)  
9th speed 1/min: 500  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 82.0...94.0  
1000H: -  
10th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 51.5...52.5  
1000H: (48.0...56.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 8.5...16.5  
1000H.: -  
2nd speed 1/min: 350  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 5.5...9.5  
1000H.: (2.5...12.5)  
3rd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 60.0

2nd speed 1/min: 250

Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H: 50.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3.6...3.8  
KF mm : K-OT  
MS mm : 1.0...1.4  
SVS max. mm : 1,4  
FH mm : -  
XK mm : -  
XL mm : -

Remarks:



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : HEP 5,6 A  
Edition : 01.02.89  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1400 R332  
Type number : 0 460 426 121

Customer-specific information  
Customer : HERCULES

Engine : DT 5.6 L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0,04)$

Start of delivery block  
Piston stroke mm: 1.1  
mm:  $\pm 0.02$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900  
Charge press. hPa: 1000

Setting value mm: 5.0...5.4

Supply-pump pressure:

Speed 1/min: 900  
Charge press. hPa: 1000  
Setting value bar: 3.9...4.5

Full-load del. with charge press.:

Speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 64.5...65.5  
Dispersion cm3/ : 4.0  
1000H. : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 19.0...20.0  
Dispersion cm3/ : 9.0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 6.0...8.0  
Dispersion cm3/ : 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 45.0...51.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 30.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1000  
TD travel mm: 2.9...3.7  
mm: (2.6...4.0)  
2nd speed 1/min: 900  
Charge press. hPa: 1000  
TD travel mm: 5.0...5.4  
mm: (4.5...5.9)

3rd speed 1/min: 1400  
Charge press. hPa: 1000  
TD travel mm: 6.2...7.0  
mm: (5.7...6.7)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.1...2.7  
2nd speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.9...4.5  
3rd speed 1/min: 1400  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.9...6.5

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1400  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 550  
LDA stroke mm: -  
Del.quantity cm<sup>3</sup>/: 52.5...53.5  
1000H.: (49.0...57.0)  
2nd speed 1/min: 1680  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1630  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...15.0  
1000H.: -  
4th speed 1/min: 1590  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
5th speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 45.0...51.0  
1000H.: (42.0...54.0)  
6th speed 1/min: 1400  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 60.5...63.5  
1000H.: (59.0...65.0)  
7th speed 1/min: 1100

Charge press. hPa: 1100  
Del.quantity cm<sup>3</sup>/: 64.0...67.0  
1000H.: (62.0...69.0)  
8th speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 64.5...65.5  
1000H.: (62.0...68.0)  
9th speed 1/min: 500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 67.0...77.0  
1000H.: -  
10th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 19.0...20.0  
1000H.: (15.5...23.5)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1400  
Del.quantity cm<sup>3</sup>/: 0...3  
1000H.: -

#### Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 6.0...7.0  
1000H.: (2.0...12.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 270  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H.: 45.0  
2nd speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H.: 45.0

#### Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

#### Mounting and assembly dimensions:

Designation  
K mm : -

KF	mm	: 5.0...5.4
MS	mm	: 1.1...1.5
SVS max.	mm	: -
XK	mm	: -
XL	mm	: -

Remarks:



## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U16  
Edition : 02.02.89  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R173-11  
Type number : 0 460 426 125

Customer-specific information  
Customer : CDC

Engine : 6BTA- 5.9 I

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.85  
mm:  $\pm 0.02(0.06)$

Outlet : 0

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750  
Charge press. hPa: 1000

Setting value mm: 1.5...1.9

Supply-pump pressure:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value bar: 2.9...3.5

Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 94.5...95.5  
Dispersion cm<sup>3</sup> : 4.0  
1000H.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del. quantity cm<sup>3</sup>/  
1000H.: 50.5...51.5  
Dispersion cm<sup>3</sup> : 9.0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000H.: 8.0...12.0  
Dispersion cm<sup>3</sup> : 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 73.0...79.0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
Charge press. hPa: 1000  
TD travel mm: 0.5...1.3  
mm: (0.2...1.6)  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
TD travel mm: 1.5...1.9  
mm: (1.0...2.4)

3rd speed 1/min: 1050  
Charge press. hPa: 1000  
TD travel mm: 2.5...3.3  
mm: (2.2...3.6)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 1.8...2.4  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.9...3.5  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.3...4.9

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 300  
LDA stroke mm: -  
Del.quantity cm<sup>3</sup>/: 79.5...80.5  
1000H.: (76.5...84.5)  
2nd speed 1/min: 1200  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1170  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...15.0  
1000H.: -  
4th speed 1/min: 1140  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
5th speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 73.0...79.0  
1000H.: (70.0...82.0)  
6th speed 1/min: 1050  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 83.5...86.5  
1000H.: (82.0...88.0)  
7th speed 1/min: 900  
Charge press. hPa: 1000

Del.quantity cm<sup>3</sup>/: 87.5...90.5  
1000H.: (86.0...92.0)  
8th speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 94.5...95.5  
1000H.: (92.0...98.0)  
9th speed 1/min: 500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 98.0...106.0  
1000H.: -  
10th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 50.5...51.5  
1000H.: (46.5...55.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 0.3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...12.0  
1000H.: (5.0...15.0)  
2nd speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 45.0

2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 55.0

Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.0...5.4

MS	mm	: 1.2...1.6
SVS max.	mm	: 1.2
XK	mm	: 21,8...23,8
XL	mm	: 14,1...17,5

Remarks:



## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U18  
Edition : 02.02.89  
replaces : -  
Calibrating oil : ISO 4113  
Injection pump : VE 6/12F1050 R225-19  
Type number : 0 460 426 127  
Customer-specific information  
Customer : CUMMINS/GB  
Engine : 6BT-5.9 IND

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
Inlet press., bar : 0.35  
Calibrating nozzle-holder  
assembly : 1 688 901 0207

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0,04)$

Start of delivery block  
Piston stroke mm: 1.5  
mm:  $\pm 0.02(0.06)$

Outlet : 0

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750  
Setting value mm: 3.4...3.8

Supply-pump pressure:

Speed 1/min: 750  
Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

Speed 1/min : 750  
Del.quantity cm<sup>3</sup>/  
1000H.: 73.0...74.0  
Dispersion cm<sup>3</sup>/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/  
1000H: 52.0...58.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
TD travel mm: 1.2...2.0  
mm: (0.9...2.3)  
2nd speed 1/min: 750  
TD travel mm: 3.4...3.8  
mm: (2.9...4.3)  
3rd speed 1/min: 1050  
TD travel mm: 4.9...5.7  
mm: (4.6...6.0)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2.6...3.2  
2nd speed 1/min: 750  
Supply-pump  
pressure bar: 3.7...4.3  
3rd speed 1/min: 1050

Supply-pump  
pressure bar: 4.9...5.5

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1170  
Del.quantity cm<sup>3</sup>/: 0.0...15.0  
1000H.: -  
3rd speed 1/min: 1130  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 52.0...58.0  
1000H.: (49.0...61.0)  
5th speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 68.5...71.5  
1000H.: (67.0...73.0)  
6th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 71.0...74.0  
1000H.: (69.0...76.0)  
7th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 73.0...74.0  
1000H.: (70.5...76.5)  
8th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 59.0...67.0  
1000H.: (57.0...69.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450

Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 60.0

2nd speed 1/min: 240  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 60.0

Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.0...5.4  
MS mm : 0.8...1.2  
SVS max. mm : 2.2

Remarks:



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U19  
Edition : 02.02.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1050 R225-20  
Type number : 0 460 426 128

Customer-specific information  
Customer : CDC

Engine : 6BT- 5.9 IND

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 035

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0,04)$

Start of delivery block  
Piston stroke mm: 1.5  
mm:  $\pm 0.02(0.06)$

Outlet : 0

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750  
Setting value mm: 3.4...3.8

Supply-pump pressure:

Speed 1/min: 750  
Setting value bar: 3.5...4.1

Full-load del. w/out charge press.:

Speed 1/min : 750  
Del.quantity cm<sup>3</sup>/  
1000H.: 64.5...65.5  
Dispersion cm<sup>3</sup>/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 10.0...12.0  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/  
1000H: 46.0...52.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
TD travel mm: 1.5...2.4  
mm: (1.2...2.6)  
2nd speed 1/min: 750  
TD travel mm: 3.4...3.8  
mm: (2.9...4.3)  
3rd speed 1/min: 1050  
TD travel mm: 5.0...5.8  
mm: (4.7...6.1)

Supply-pump pressure characteristic:

Mfg. date: until : 500  
Supply-pump  
pressure bar: 2.4...3.0  
2nd speed 1/min: 750  
Supply-pump  
pressure bar: 3.5...4.1  
3rd speed 1/min: 1050

Supply-pump  
pressure bar: 4.6...5.2

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1160  
Del.quantity cm<sup>3</sup>/: 0.0...15.0  
1000H.: -  
3rd speed 1/min: 1130  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 46.0...52.0  
1000H.: (43.0...55.0)  
5th speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 60.5...63.5  
1000H.: (59.0...65.0)  
6th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 62.0...65.0  
1000H.: (60.0...67.0)  
7th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 64.5...65.5  
1000H.: (62.0...68.0)  
8th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 64.0...72.0  
1000H.: -

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 10.0..12.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 500

Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 70.0

2nd speed 1/min: 350  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 70.0

Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.0...5.4  
MS mm : 1.2...1.6  
SVS max. mm : -  
XK mm : -  
XL mm : -

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U20  
Edition : 0.2.02.89  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R225-18  
Type number : 0 460 426 129

Customer-specific information  
Customer : CDC

Engine : 6BT-5.9 IND

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC): +0.02 (0,04)

Start of delivery block  
Piston stroke mm: 1.5  
mm: +0.02(0.06)

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750  
Setting value mm: 3.4...3.8

Supply-pump pressure:

Speed 1/min: 750  
Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

Speed 1/min : 750  
Del.quantity cm3/  
1000H.: 75.0...76.0  
Dispersion cm3/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 10.0...12.0  
Dispersion cm3/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100  
Del.quantity cm3/  
1000H: 52.0...58.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
TD travel mm: 1.4...2.2  
mm: (1.1...2.5)

2nd speed 1/min: 750  
TD travel mm: 3.4...3.8  
mm: (2.9...4.3)

3rd speed 1/min: 1050  
TD travel mm: 4.6...5.4  
mm: (4.3...5.7)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2.6...3.2

2nd speed 1/min: 750  
Supply-pump  
pressure bar: 3.7...4.3

3rd speed 1/min: 1050

Supply-pump  
pressure bar: 4.9...5.5

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1170  
Del.quantity cm<sup>3</sup>/: 0.0...15.0  
1000H.: -  
3rd speed 1/min: 1130  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 52.0...58.0  
1000H.: (49.0...61.0)  
5th speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 68.5...71.5  
1000H.: (67.0...73.0)  
6th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 71.5...74.5  
1000H.: (69.5...74.5)  
7th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 75.0...76.0  
1000H.: (72.5...78.5)  
8th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 59.5...67.5  
1000H.: (57.5...69.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: 12.0  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 10.0...12.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450

Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 60.0

2nd speed 1/min: 240  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 60.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5.0...5.4
MS	mm	: 0.8...1.2
SVS max.	mm	: -
XK	mm	: -
XL	mm	: -

Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 P  
Edition : 10.03.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 8F2300 R317  
Type number : 0 460 484 020

Customer-specific information  
Customer : RNUR

Engine : F8Q-AD6

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC): -

Indicator setting:  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 3,8...4,2  
KSB solenoid-operated  
valve volt: -

Supply-pump pressure:

D27

Speed 1/min: 1250  
Setting value bar: 4,5...5,1  
KSB solenoid-operated  
valve volt: -

Full-load del. w/out charge press.:

Speed 1/min : 1250  
Del.quantity cm3/  
1000H.: 31,5...32,5  
KSB solenoid-operated  
valve volt: -  
Dispersion cm3/: 2,5  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 400  
Del.quantity cm3/  
1000H.: 4,0...8,0  
KSB solenoid-operated  
valve volt: -  
Dispersion cm3/: 2,5  
1000H.: (3,0)  
Residual-Delivery Setting  
Speed 1/min: 500  
Del.quantity cm3/  
1000H.: 1,0...5,0  
KSB-Solenoid-Operated  
valve Volt : -

Full-load speed regulation:

Speed 1/min: 2450  
Del.quantity cm3/  
1000H.: 24,0...30,0  
KSB solenoid-operated  
valve volt: -

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 40,0  
KSB solenoid-operated  
valve volt: -

Load-dependent start of delivery:

Speed 1/min: 1250  
KSB solenoid-operated  
valve volt: -

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 310  
 TD travel mm: 0,3...2,7  
 mm: -  
 KSB solenoid-operated  
 valve volt: 12,0  
 2nd speed 1/min: 500  
 TD travel mm: 1,6...4,0  
 mm: -  
 KSB solenoid-operated  
 valve volt: 12,0  
 3rd speed 1/min: 750  
 TD travel mm: 1,6...2,4  
 mm: (1,3...2,7)  
 KSB solenoid-operated  
 valve volt: -  
 4th speed 1/min: 1250  
 TD travel mm: 3,8...4,2  
 mm: (3,3...4,7)  
 KSB solenoid-operated  
 valve volt: -  
 5th speed 1/min: 2000  
 TD travel mm: 6,6...7,4  
 mm: (6,3...7,7)  
 KSB solenoid-operated  
 valve volt: -  
 6th speed 1/min: 2250  
 TD travel mm: 7,6...8,4  
 mm: (7,3...8,7)  
 KSB solenoid-operated  
 valve volt: -

#### Supply-pump pressure characteristic:

1st speed 1/min: 750  
 Supply-pump  
 pressure bar: 3,1...3,7  
 KSB solenoid-operated  
 valve volt: -  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure bar: 4,5...5,1  
 KSB solenoid-operated  
 valve volt: -  
 3rd speed 1/min: 2250  
 Supply-pump  
 pressure bar: 7,0...7,6  
 KSB solenoid-operated  
 valve volt: -

#### Overflow quantity at overflow valve:

1st speed 1/min: 750  
 KSB solenoid-operated  
 valve volt: -  
 Overflow : 41...83  
 quantity cm<sup>3</sup>/10s: (26...98)  
 2nd speed 1/min: 2250  
 KSB solenoid-operated  
 valve volt: -

Overflow : 55...138  
 quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 2950  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 0,0...5,0  
 1000H.: (0,0...5,0)  
 2nd speed 1/min: 2650  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 8,0...16,0  
 1000H.: (7,0...17,0)  
 3rd speed 1/min: 2450  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 24,0...30,0  
 1000H.: (23,0...31,0)  
 4th speed 1/min: 2250  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 31,1...33,1  
 1000H.: (29,8...34,4)  
 5th speed 1/min: 2000  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 30,5...32,5  
 1000H.: (29,2...33,8)  
 6th speed 1/min: 1625  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 29,9...32,9  
 1000H.: (29,1...33,7)  
 7th speed 1/min: 1250  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 31,5...32,5  
 1000H.: (29,7...34,3)  
 8th speed 1/min: 750  
 KSB solenoid-operated  
 valve volt: -  
 Del.quantity cm<sup>3</sup>/: 30,2...33,2  
 1000H.: (29,4...34,0)

#### Zero delivery (stop):

#### Electr. shutoff:

Speed 1/min: 400  
 ELAB volt: -  
 Del.quantity cm<sup>3</sup>/: 0,0...3,0  
 max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 400

KSB solenoid-operated  
valve volt: -  
Del.quantity cm3/: 4,0...8,0  
1000H.: (2,0...10,0)

High Idle:

Speed 1/min: 500  
Del.quantity cm3/: 7,7...11,7  
1000H.: (5,7...13,7)

KSB-Solenoid-operated  
valve Volt: -

Automatic starting fuel delivery:

1st speed 1/min: 210  
KSB solenoid-operated  
valve volt: -  
Del.quantity cm3/: -  
ind. 1000H: 45,0

2nd speed 1/min: 310  
KSB solenoid-operated  
valve volt: -  
Del.quantity cm3/: -  
max. 1000H: 45,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,3...5,7  
MS mm : 1,1...1,5  
SVS max. mm : 1,4

Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,3 B  
Edition : 01.02.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 8F2450 L331  
Type number : 0 460 484 021  
  
Customer-specific information  
Customer : VOLKSWAGEN  
  
Engine : 1.31 SAUGD., POLO

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0.35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 3.9...4.3

### Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 5.4...6.0

Full-load del. w/out charge press.:

Speed 1/min: 1500  
Del.quantity cm<sup>3</sup>/  
1000H.: 22.5...23.5  
Dispersion cm<sup>3</sup>/  
1000H.: (3.0)

### Low-idle speed regulation:

Speed 1/min: 425  
Del.quantity cm<sup>3</sup>/  
1000H.: 9.5...11.5  
Residual-Delivery Setting  
Speed 1/min: 575  
Del.quantity cm<sup>3</sup>/  
1000H.: 2.5...3.5

### Full-load speed regulation:

Speed 1/min: 2600  
Del.quantity cm<sup>3</sup>/  
1000H.: 9.0...13.0

### Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 32.0

Inspection-pump test specifications  
Test specifications in parentheses

### Timing-device characteristic:

1st speed 1/min: 1000  
TD travel mm: 1.6...2.4  
mm: (1.3...2.7)  
2nd speed 1/min: 1500  
TD travel mm: 3.9...4.3  
mm: (3.4...4.8)  
3rd speed 1/min: 2200  
TD travel mm: 6.9...7.7  
mm: (6.6...8.0)

### Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 3.7...4.3  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 5.4...6.0  
3rd speed 1/min: 2450  
Supply-pump  
pressure bar: 7.7...8.3

### Overflow quantity at overflow valve:

1st speed 1/min: 800



Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2450  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Del.quantity cm3/: 0.0...6.0  
1000H.: -  
2nd speed 1/min: 2600  
Del.quantity cm3/: 9.0...13.0  
1000H.: (7.0...15.0)  
3rd speed 1/min: 2550  
Del.quantity cm3/: 10.5...20.5  
1000H.: (9.5...21.5)  
4th speed 1/min: 2450  
Del.quantity cm3/: 21.0...23.0  
1000H.: (19.8...24.2)  
5th speed 1/min: 1500  
Del.quantity cm3/: 22.5...23.5  
1000H.: (20.8...25.2)  
6th speed 1/min: 800  
Del.quantity cm3/: 18.5...21.5  
1000H.: (17.0...23.0)  
7th speed 1/min: 600  
Del.quantity cm3/: 15.0...20.0  
1000H.: (12.5...22.5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 450  
ELAB volt: -  
Del.quantity cm3/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425  
Del.quantity cm3/: 9.5...11.5  
1000H.: (6.5...14.5)  
2nd speed 1/min: 450  
Del.quantity cm3/: 5.5...8.5  
1000H.: (3.0...11.0)

Residual:

Speed 1/min: 525  
Del.quantity : 3.0...5.0  
1000H.: (1.5...5.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del.quantity cm3/: -  
ind. 1000H: 30.0

2nd speed 1/min: 400  
Del.quantity cm3/: -  
max. 1000H : 30.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : 3.2...3.4  
KF mm : -  
MS mm : 1.2...1.6

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,4 S6  
Edition : 03.02.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 5/ 8F2200 L336  
Type number : 0 460 485 001

Customer-specific information  
Customer : AUDI

Engine : 153-2.4L

Power k: 60.0  
Speed 1/mi: 4400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 2.7...3.1  
KSB solenoid-operated  
valve volt: 12.0

Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 5.7...6.3  
KSB solenoid-operated  
valve volt: 12.0

Full-load del. w/out charge press.:

Speed 1/min : 1250  
Del.quantity cm3/  
1000H.: 35.0...36.0  
KSB solenoid-operated  
valve volt: 12.0  
Dispersion cm3/: 2.0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 415  
Del.quantity cm3/  
1000H.: 7.0...9.0

KSB solenoid-operated  
valve volt: 12.0  
Dispersion cm3/: 2.0  
1000H.: (3.0)  
Residual-Delivery Setting  
Speed 1/min: 540  
Del.quantity cm3/  
1000H.: 2.0...3.0

KSB-Solenoid-Operated  
valve Volt : 12.0

Full-load speed regulation:

Speed 1/min: 2525  
Del.quantity cm3/  
1000H: 10.0...14.0  
KSB solenoid-operated  
valve volt: 12.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 35.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
TD travel mm: 2.3...2.7  
mm: (1.5...3.5)  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 750  
TD travel mm: 0.6...1.4  
mm: (0.3...1.7)

KSB solenoid-operated  
valve volt: 12.0  
3rd speed 1/min: 1250  
TD travel mm: 2.7...3.1  
mm: (2.2...3.6)

KSB solenoid-operated  
valve volt: 12.0  
4th speed 1/min: 2000  
TD travel mm: 5.9...6.7  
mm: (5.6...7.0)

KSB solenoid-operated  
valve volt: 12.0

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 5.1...6.3

KSB solenoid-operated  
valve volt: -

2nd speed 1/min: 750

Supply-pump  
pressure bar: 4.6...5.2

KSB solenoid-operated  
valve volt: 12.0

3rd speed 1/min: 1250

Supply-pump  
pressure bar: 5,7...6,3

KSB solenoid-operated  
valve volt: 12.0

4th speed 1/min: 2200

Supply-pump  
pressure bar: 7.7...8.3  
bar: (7.5...8.5)

KSB solenoid-operated  
valve volt: 12.0

#### Overflow quantity at overflow valve:

1st speed 1/min: 750  
KSB solenoid-operated  
valve volt: 12.0  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)

2nd speed 1/min: 2200  
KSB solenoid-operated  
valve volt: 12.0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 2700  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 0.0...6.0  
1000H.: -

2nd speed 1/min: 2525  
KSB solenoid-operated  
valve volt: 12.0

Del.quantity cm<sup>3</sup>/: 10.0...14.0  
1000H.: (8.0...16.0)

3rd speed 1/min: 2425

KSB solenoid-operated  
valve volt: 12.0

Del.quantity cm<sup>3</sup>/: 18.0...28.0  
1000H.: (17.0...29.0)

4th speed 1/min: 2200

KSB solenoid-operated  
valve volt: 12.0

Del.quantity cm<sup>3</sup>/: 29.2...31.2  
1000H.: (28.0...32.4)

5th speed 1/min: 1250

KSB solenoid-operated  
valve volt: 12.0

Del.quantity cm<sup>3</sup>/: 35.0...36.0  
1000H.: (33.2...37.7)

6th speed 1/min: 750

KSB solenoid-operated  
valve volt: 12.0

Del.quantity cm<sup>3</sup>/: 30.3...33.7  
1000H.: (29.2...35.2)

7th speed 1/min: 500

KSB solenoid-operated  
valve volt: 12.0

Del.quantity cm<sup>3</sup>/: 29.5...34.5  
1000H.: (27.0...37.0)

#### Zero delivery (stop):

#### Electr. shutoff:

Speed 1/min: 415  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 365  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 14.5...17.5  
1000H.: (12.0...20.0)

2nd speed 1/min: 415  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: 7.0...9.0  
1000H.: (4.0...12.0)

#### Residual:

Speed 1/min: 490  
Del.quantity : 2.5...4.5  
1000H.: (1.0...6.0)  
KSB-Solenoid-operated  
valve Volt: 12.0

#### Automatic starting fuel delivery:

1st speed 1/min: 180  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 35.0

2nd speed 1/min: 380  
KSB solenoid-operated  
valve volt: 12.0  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 40.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	: 3.1...3.5
KF	mm	: K-OT
MS	mm	: 1.2...1.6
SVS max.	mm	: -

Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7 P5  
Edition : 16.01.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2100 R343  
Type number : O 460 494 246

Customer-specific information  
Customer : FIAT-AUTO

Engine : M710 DT 19 D

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 5,5...5,9  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value bar: 5,3...5,9  
KSB solenoid-operated  
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 52,0...53,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 2,5  
1000H : (2,5)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del.quantity cm3/  
1000H.: 40,0...41,0  
KSB solenoid-operated  
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 400  
Del.quantity cm3/  
1000H.: 11,0...15,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 2,5  
1000H.: (2,5)

Residual-Delivery Setting  
Speed 1/min: 700  
Del.quantity cm3/  
1000H.: 4,0...6,0  
KSB-Solenoid-Operated  
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2300  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H: 30,0...36,0  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 55,0  
KSB solenoid-operated  
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
TD travel mm: 3,2...4,8  
mm: (2,5...5,5)

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
TD travel mm: 2,5...5,5  
mm: (2,5...5,5)

KSB solenoid-operated  
valve volt: -  
3rd speed 1/min: 800  
Charge press. hPa: 1000  
TD travel mm: 1,8...2,6  
mm: (1,5...2,9)

KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 1500  
Charge press. hPa: 1000  
TD travel mm: 5,5...5,9  
mm: (5,2...6,2)

KSB solenoid-operated  
valve volt: 12,0  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
TD travel mm: 8,2...9,0  
mm: (7,9...9,3)

KSB solenoid-operated  
valve volt: 12,0

#### Supply-pump pressure characteristic:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 3,2...3,8

KSB solenoid-operated  
valve volt: 12,0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5,3...5,9

KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7,0...7,6

KSB solenoid-operated  
valve volt: 12,0

#### Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
Charge-air pressure-setting  
point hPa: 400  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 43,5...44,5  
1000H.: (41,5...46,5)

2nd speed 1/min: 2650  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...7,0  
1000H.: -

3rd speed 1/min: 2450  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 12,0...20,0  
1000H.: (11,0...21,0)

4th speed 1/min: 2300  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 30,0...36,0  
1000H.: (29,0...37,0)

5th speed 1/min: 2100  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 50,5...53,5  
1000H.: (49,5...54,5)

6th speed 1/min: 1500  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 52,0...53,0  
1000H.: (50,5...54,5)

7th speed 1/min: 800  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 55,5...58,5  
1000H.: -

8th speed 1/min: 800  
Charge press. hPa: 400  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 43,5...44,5  
1000H.: (41,5...46,5)

9th speed 1/min: 800  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 37,0...39,0  
1000H: (35,5...40,5)  
10th speed 1/min: 600  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 40,0...41,0  
1000H: (38,0...43,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 11,0...15,0  
1000H.: (9,5...16,5)

Residual:

Speed 1/min: 500  
Del.quantity : 4,8...7,8  
1000H.: -  
KSB-Solenoid-operated  
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 220  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: -  
ind. 1000H: 57,0

2nd speed 1/min: 300  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: -  
max. 1000H : 48,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

E09

K mm : 3,2...3,4  
KF mm : 5,6...6,0  
MS mm : 1,0...1,4

Remarks:

Correction at adjusting nut (46)

Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 01  
Edition : 01.02.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2350 R309-1  
Type number : 0 460 494 247  
  
Customer-specific information  
Customer : RNUR  
  
Engine : J8S - 740

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0.35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 0.35

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1125  
Setting value mm: 2.6...3.0

Supply-pump pressure:

Speed 1/min: 1125  
Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

Speed 1/min: 1125  
Del.quantity cm3/  
1000H.: 36.5...37.5  
Dispersion cm3/: 2.5  
1000H.: (3.0)

Low-idle speed regulation:

Speed 1/min: 400  
Del.quantity cm3/  
1000H.: 6.0...10.0  
Dispersion cm3/: 2.5  
1000H.: (3.0)  
Residual-Delivery Setting  
Speed 1/min: 500  
Del.quantity cm3/  
1000H.: 1.0...5.0

Full-load speed regulation:

Speed 1/min: 2500  
Del.quantity cm3/  
1000H.: 20.0...26.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 52.0

Load-dependent start of delivery:

Speed 1/min: 1125

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
TD travel mm: 0.7...1.5  
mm: (0.4...1.8)  
2nd speed 1/min: 1125  
TD travel mm: 2.6...3.0  
mm: (2.1...3.5)  
3rd speed 1/min: 2000  
TD travel mm: 6.9...7.7  
mm: (6.6...8.0)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 3.1...3.7  
2nd speed 1/min: 1125  
Supply-pump  
pressure bar: 4.2...4.8  
3rd speed 1/min: 2000



Supply pump  
pressure

bar: 6.5...7.1

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2250  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2750  
Del.quantity cm<sup>3</sup>/: 0.0...5.0  
1000H.: -  
2nd speed 1/min: 2650  
Del.quantity cm<sup>3</sup>/: 2.0...10.0  
1000H.: (1.0...11.0)  
3rd speed 1/min: 2250  
Del.quantity cm<sup>3</sup>/: 34.3...36.3  
1000H.: (33.0...37.6)  
4th speed 1/min: 1750  
Del.quantity cm<sup>3</sup>/: 34.0...36.0  
1000H.: (32.7...37.3)  
5th speed 1/min: 1125  
Del.quantity cm<sup>3</sup>/: 36.5...37.5  
1000H.: (34.7...39.3)  
6th speed 1/min: 800  
Del.quantity cm<sup>3</sup>/: 33.5...36.5  
1000H.: (32.7...37.3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 6,0...10,0  
1000H.: (4,0...12,0)

High Idle:

Speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 7,7...11,7  
1000H.: (5,7...13,7)

Residual:

Speed 1/min: 500  
Del.quantity : 1,0...5,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 210  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 45.0

2nd speed 1/min: 310  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 45.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	: 3.2...3.4
KF	mm	: 5.3...5.7
MS	mm	: 1.3...1.7
SVS max.	mm	: 2.3

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 02  
 Edition : 01.02.89  
 replaces : -  
 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2350 R309-2  
 Type number : 0 460 494 251

Customer-specific information  
 Customer : RNUR

Engine : J8S-736 , 740

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40...48  
 electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
 assembly : 1 688 901 022

Opening  
 pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
 x Wall thickness : 2  
 x Length mm : 450

Start of delivery  
 Prestroke mm : -  
 (from BDC): -

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1125  
 Setting value mm: 2.6...3.0

Supply-pump pressure:

Speed 1/min: 1125  
 Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

Speed 1/min : 1125  
 Del.quantity cm3/  
 1000H.: 36.5...37.5  
 Dispersion cm3/: 2.5  
 1000H.: (3.0)

Low-idle speed regulation:

Speed 1/min: 400  
 Del.quantity cm3/  
 1000H.: 6.0...10.0  
 Dispersion cm3/: 2.5  
 1000H.: (3.0)  
 Residual-Delivery Setting  
 Speed 1/min: 500  
 Del.quantity cm3/  
 1000H.: 1.0...5.0

Full-load speed regulation:

Speed 1/min: 2500  
 Del.quantity cm3/  
 1000H.: 20.0...26.0

Start:

Speed 1/min: 100  
 Del.quantity : -  
 mind cm3/1000H.: 52.0

Load-dependent start of delivery:

Speed 1/min: 1125

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
 TD travel mm: 0.7...1.5  
 mm: (0.4...1.8)  
 2nd speed 1/min: 1125  
 TD travel mm: 2.6...3.0  
 mm: (2.1...3.5)  
 3rd speed 1/min: 2000  
 TD travel mm: 6.9...7.7  
 mm: (6.6...8.0)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Supply-pump  
 pressure bar: 3.1...3.7  
 2nd speed 1/min: 1125  
 Supply-pump  
 pressure bar: 4.2...4.8  
 3rd speed 1/min: 2000

Supply-pump  
pressure bar: 6.5...7.1

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2250  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2750  
Del.quantity cm<sup>3</sup>/: 0.0...5.0  
1000H.: -  
2nd speed 1/min: 2650  
Del.quantity cm<sup>3</sup>/: 2.0...10.0  
1000H.: (1.0...11.0)  
3rd speed 1/min: 2250  
Del.quantity cm<sup>3</sup>/: 34.3...36.3  
1000H.: (33.0...37.6)  
4th speed 1/min: 1750  
Del.quantity cm<sup>3</sup>/: 34.0...36.0  
1000H.: (32.7...37.3)  
5th speed 1/min: 1125  
Del.quantity cm<sup>3</sup>/: 36.5...37.5  
1000H.: (34.7...39.3)  
6th speed 1/min: 800  
Del.quantity cm<sup>3</sup>/: 33.5...36.5  
1000H.: (32.7...37.3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 6.0...10.0  
1000H.: (4.0...12.0)

High Idle:

Speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 7.7...11.7  
1000H.: (5.7...13.7)

Residual:

Speed 1/min: 500  
Del.quantity : 1.0...5.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 210  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 45.0

2nd speed 1/min: 310  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 45.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : 3.2...3.4  
KF mm : 5.3...5.7  
MS mm : 1.3...1.7  
SVS max. mm : 2.3

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 2,0 K1  
Edition : 3.3.89  
replaces : 16.1.89  
Calibrating oil : ISO 4113  
  
Injection pump : VE 5/ 9F2250 L245  
Type number : 0 460 495 001  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 153T-LLK

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 3,0...3,4  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 6,0...6,6  
KSB solenoid-operated  
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500  
Del.quantity cm3/  
1000H.: 42,7...43,7  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 2,5  
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del.quantity cm3/  
1000H.: 27,0...28,0  
KSB solenoid-operated  
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 390  
Del.quantity cm3/  
1000H.: 10,0...12,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 2,5  
1000H.: (3,0)  
Residual-Delivery Setting  
Speed 1/min: 540  
Del.quantity cm3/  
1000H.: 2,5...3,5  
KSB-Solenoid-Operated  
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2525  
Del.quantity cm3/  
1000H: 16,0...20,0  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : 37,0...48,0  
mind cm3/1000H.: -  
KSB solenoid-operated  
valve volt: 12,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 750  
 TD travel mm: 2,3...2,7  
 mm: 1,5...3,5  
 2nd speed 1/min: 1000  
 Charge press. hPa: 750  
 TD travel mm: 0,8...1,6  
 mm: (0,5...1,9)  
 KSB solenoid-operated  
 valve volt: 12,0  
 3rd speed 1/min: 1500  
 Charge press. hPa: 750  
 TD travel mm: 3,0...3,4  
 mm: (1,5...3,9)  
 KSB solenoid-operated  
 valve volt: 12,0  
 4th speed 1/min: 2250  
 Charge press. hPa: 750  
 TD travel mm: 6,1...6,9  
 mm: (5,8...7,2)  
 KSB solenoid-operated  
 valve volt: 12,0

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 750  
 Supply-pump  
 pressure bar: 5,2...6,4  
 2nd speed 1/min: 700  
 Charge press. hPa: 750  
 Supply-pump  
 pressure bar: 4,1...4,7  
 KSB solenoid-operated  
 valve volt: 12,0  
 3rd speed 1/min: 1500  
 Charge press. hPa: 750  
 Supply-pump  
 pressure bar: 6,0...6,6  
 KSB solenoid-operated  
 valve volt: 12,0  
 4th speed 1/min: 2250  
 Charge press. hPa: 750  
 Supply-pump  
 pressure bar: 7,7...8,3  
 KSB solenoid-operated  
 valve volt: 12,0

#### Overflow quantity at overflow valve:

1st speed 1/min: 700  
 KSB solenoid-operated  
 valve volt: 12,0  
 Overflow : 41...83  
 quantity cm<sup>3</sup>/10s: (26...98)  
 2nd speed 1/min: 2250  
 Charge press. hPa: 750

KSB solenoid-operated  
 valve volt: 12,0  
 Overflow : 55...138  
 quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 2700  
 Charge-air pressure-setting  
 point hPa: 750  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 0,0...6,0  
 1000H.: (0,0...6,0)  
 2nd speed 1/min: 2525  
 Charge press. hPa: 750  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 16,0...20,0  
 1000H.: (14,0...22,0)  
 3rd speed 1/min: 2425  
 Charge press. hPa: 750  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 25,5...35,5  
 1000H.: (24,5...36,5)  
 4th speed 1/min: 2250  
 Charge press. hPa: 750  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 36,5...38,5  
 1000H.: (35,3...39,7)  
 5th speed 1/min: 1500  
 Charge press. hPa: 750  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 42,7...43,7  
 1000H.: (41,0...45,4)  
 6th speed 1/min: 850  
 Charge press. hPa: 750  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 33,5...34,5  
 1000H.: (31,0...37,0)  
 7th speed 1/min: 700  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 27,0...28,0  
 1000H.: (24,5...30,5)  
 8th speed 1/min: 700  
 Charge press. hPa: 750  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 37,0...40,0  
 1000H.: (35,5...41,5)  
 9th speed 1/min: 500  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm<sup>3</sup>/: 24,5...29,5  
 1000H.: (22,0...32,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 415  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 390  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 10,0...12,0  
1000H.: (5,5...16,5)  
2nd speed 1/min: 415  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 6,0...10,0  
1000H.: (2,5...13,5)

Residual:

Speed 1/min: 490  
Del.quantity : 3,3...5,3  
1000H.: (0,8...7,8)  
KSB-Solenoid-operated  
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 190  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 35,0...85,0  
ind. 1000H: 35,0

2nd speed 1/min: 390  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 15,0...35,0  
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : K1  
KF mm : -  
MS mm : 1,6...2,0  
SVS max. mm : 1,3

Remarks:

:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

Correction at adjusting nut (46)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 n  
Edition : 07.04.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 406

Injection pump  
Pump designation : PE6P100A32OLS805  
EP type number : 0 411 806 148  
Governor  
Governor design. : RQ300/1150PA436R  
Governor no. : 0 421 801 089

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM 401

1st version kW : 136.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.40...3.50  
: (3.35...3.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.0

Del.quantity cm3/ : 2.5...3.0

100 s: (2.2...3.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.2

Testing:

1st rack travel in: 9.50

Speed rpm : 1180...1190

2nd rack travel in: 4.10  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.9

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.40  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 650  
Rack travel in m: 10.50...10.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1180...1190

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...130.0  
1000 s: (106.0...134.0)

Remarks:

:

APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 k 1  
Edition : 07.04.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 443  
Injection pump  
Pump designation : PE6P110A72ORS371-1  
EP type number : 0 411 816 166  
Governor  
Governor design. : RQV300...1100PA551  
Governor no. : 0 421 813 272

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM355A

1st version kW : 206.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
Rack travel in mm : 6.1...6.3  
Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.2)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.30...1.40  
2nd speed rpm : 440  
travel mm : 2.50...2.90  
3rd speed rpm : 1150  
travel mm : 8.40...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 700  
Del.quantity : 160.0...162.0  
1000 : (157.5...164.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 64...68

Testing:

1st rack travel in: 10.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 440...500

CONSTANT REGULATION

Speed rpm : 275...330

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.00...11.10

2nd pressure hPa : 390

Rack travel in m: 11.50...11.60

3rd pressure hPa : 350

Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600

E20

Del.quantity cm3/ : 156.0...160.0

1000 s: (153.0...163.0)

Spread

cm3 : 6.00

1000 s: (9.00)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 135.0...137.0

1000 s: (132.0...140.0)

Spread

cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 135.0...155.0

1000 s: (131.0...159.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 i 1  
Edition : 07.04.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 450  
Injection pump  
Pump designation : PE6P110A720RS371-1  
EP type number : 0 411 816 166  
Governor  
Governor design. : RQV300...1100PA568  
Governor no. : 0 421 813 286

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM355A

1st version kW : 206.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...2.00

2nd speed rpm : 540

travel mm : 4.40...4.60

3rd speed rpm : 820

travel mm : 5.90...6.20

4th speed rpm : 1100

travel mm : 8.30...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...68

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

#### CONSTANT REGULATION

Speed rpm : 275...330

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 390  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 350  
Rack travel in m: 11.20...11.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600

E22

Del.quantity cm<sup>3</sup>/ : 155.0...159.0  
1000 s: (152.0...162.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (131.0...159.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 h  
Edition : 29.03.89  
Replaces : 2.12.88  
Test oil : ISO-4113

Combination no. : 0 401 846 482

Injection pump  
Pump designation : PE6P120A320RS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RQV250...1100PA680  
Governor no. : 0 421 813 374

Customer-spec. information  
Customer : ENASA

Engine : 96 T1 AX,BX

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40

2nd speed rpm : 350  
travel mm : 1.70...2.30

3rd speed rpm : 650  
travel mm : 4.00...4.60

4th speed rpm : 1145  
travel mm : 8.30...8.50

5th speed rpm : 1225  
travel mm : 9.20...9.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 43...51

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...22

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

#### CONSTANT REGULATION

Speed rpm : 250...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 650  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 850  
Rack travel in m: 10.20...10.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.20...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 415  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 290  
Rack travel in m: 9.20...9.40

#### START CUT-OUT

Speed 1/min : 170 (150)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 173.0...179.0  
1000 s: (170.0...182.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,6 a  
Edition : 07.04.89  
Replaces : 8.6.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 494  
  
Injection pump  
Pump designation : PE6P100A72ORS473  
EP type number : 0 411 806 196  
Governor  
Governor design. : RQ300/1100PA269-1  
Governor no. : 0 421 801 237

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 355

1st version kW : 177.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.1...8.3

Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 2.30...2.60

2nd speed rpm : 600  
travel mm : 6.90...7.10

3rd speed rpm : 1150  
travel mm : 7.30...7.70

4th speed rpm : 1200  
travel mm : 10.00...10.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.40...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread      cm<sup>3</sup> : 3.50  
             1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 43...51

#### Testing:

1st rack travel in: 11.50  
Speed      rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed      rpm : 1185...1215  
4th rack travel in: 1350  
Speed      rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 13...21

#### Testing:

Speed      rpm : 200  
Minimum rack travel: 7.50  
Speed      rpm : 300  
Rack travel in mm : 6.00...6.30  
Rack travel in mm : 2.00  
Speed      rpm : 350...390

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed      rpm : 600  
Del.quantity cm<sup>3</sup>/ : 110.0...114.0  
             1000 s: (107.5...116.5)  
Spread      cm<sup>3</sup> : 5.00  
             1000 s: (7.)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed      rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed      rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
             1000 s: (146.0...174.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,6 a 2  
 Edition : 07.04.89  
 Replaces : 11.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 514  
 Injection pump  
 Pump designation : PE6P100A72ORS473  
 EP type number : 0 411 806 196  
 Governor  
 Governor design. : RQ300/1100PA269-2  
 Governor no. : 0 421 801 293

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 355

1st version kW : 155.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.40...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.6

Testing:

1st rack travel in: 10.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1195...1215  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 10.10  
Speed rpm : 300  
Rack travel in mm : 8.40...8.60  
Rack travel in mm : 2.00  
Speed rpm : 440...480

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 89.0...93.0  
1000 s: (86.5...95.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 12,0 a  
Edition : 29.03.89  
Replaces : 22.1.88  
Test oil : ISO-4113  
Combination no. : 0 401 846 548  
Injection pump  
Pump designation : PE6P120A320RS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RQ250/1100FA877  
Governor no. : 0 421 501 409

Customer spec. information  
Customer : ENASA

Engine : 9156.13V1

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

F01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.60...10.70

Del. quantity cm<sup>3</sup>/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.40...16.60

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del. quantity : 200.0...202.0

1000 : (197.0...205.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.60

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100

Minimum rack travel: 7.10

Speed rpm : 250

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 10.60...10.70

2nd speed rpm : 600

Rack travel in m: 11.10...11.30

3rd speed rpm : 720

Rack travel in m: 10.70...10.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 11.10...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 340

Rack travel in m: 9.30...9.40

3rd pressure hPa : 470

Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 182.0...188.0

1000 s: (179.0...191.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 130.0...132.0

1000 s: (127.0...135.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 130.0...150.0

1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 d  
Edition : 07.02.89  
Replaces : 9.1.89  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 549  
  
Injection pump  
Pump designation : PE6P100A820LS503  
EP type number : 0 411 806 197  
Governor  
Governor design. : RGV250...1000PA811  
Governor no. : 0 421 813 556

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AX,BX

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1050

travel mm : 8.50...8.70

5th speed rpm : 1140

travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (163.0...169.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...350

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 550  
Rack travel in m: 15.00...15.30  
3rd speed rpm : 750  
Rack travel in m: 14.80...15.00  
4th speed rpm : 850  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

START CUT-OUT

FO4

Speed 1/min : 170 (190)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (168.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

## APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 d1  
Edition : 07.02.89  
Replaces : 9.1.89  
Test oil : ISO-4113  
Combination no. : 0 401 846 549A  
Injection pump  
Pump designation : PE6P100A820LS503  
EP type number : 0 411 806 197  
Governor  
Governor design. : RQV250...1000PA811  
Governor no. : 0 421 813 556

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 BV

1st version kW : 165.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

F05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40

2nd speed rpm : 400  
travel mm : 2.20...2.80

3rd speed rpm : 650  
travel mm : 4.50...5.10

4th speed rpm : 1050  
travel mm : 8.50...8.70

5th speed rpm : 1140  
travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (163.0...169.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 46...54

#### Testing:

1st rack travel in: 13.20  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 250...350

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 550  
Rack travel in m: 15.00...15.30  
3rd speed rpm : 750  
Rack travel in m: 14.80...15.00  
4th speed rpm : 850  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300

F06

Rack travel in m: 13.40...13.60

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (168.0...176.0)  
Speed rpm : 450  
Del.quantity cm<sup>3</sup>/ : 90.0...94.0  
1000 s: (88.0...96.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1030...1040

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 d2  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 549B  
 Injection pump  
 Pump designation : PE6P100A820LS503  
 EP type number : 0 411 806 197  
 Governor  
 Governor design. : RQV250...1000PA811  
 Governor no. : 0 421 813 556

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AW

1st version kW : 155.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

F07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 400  
 travel mm : 2.20...2.80

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1050  
 travel mm : 8.50...8.70

5th speed rpm : 1140  
 travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (148.0...154.0)

Spread        cm<sup>3</sup> : 3.50  
              1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 12.30  
Speed        rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed        rpm : 1130...1160  
4th rack travel in: 1250  
Speed        rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed        rpm : 100  
Minimum rack travel: 7.50  
Speed        rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed        rpm : 250...350

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed    rpm : 980  
Rack travel in m: 13.30...13.40  
2nd speed    rpm : 550  
Rack travel in m: 14.00...14.30  
3rd speed    rpm : 750  
Rack travel in m: 13.80...14.00  
4th speed    rpm : 850  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed        rpm : 500  
Pressure     hPa : 900  
Rack travel mm : 13.30...13.40

Measurement  
Speed        1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.70...13.00  
2nd pressure hPa : 260  
Rack travel in m: 13.10...13.20

#### START CUT-OUT

Speed        1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed        rpm : 700  
Del.quantity cm<sup>3</sup>/ : 143.0...147.0  
              1000 s: (141.0...149.0)  
Speed        rpm : 450  
Del.quantity cm<sup>3</sup>/ : 89.0...93.0  
              1000 s: (87.0...95.0)  
Aneroid pressure h: -  
Speed        rpm : 500  
Del.quantity cm<sup>3</sup>/ : 127.0...129.0  
              1000 s: (124.0...132.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed        rpm : 1030...1040

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
              1000 s: (176.0...204.0)

#### LOW IDLE

Speed        rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 e  
Edition : 07.02.89  
Replaces : 24.6.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 552  
  
Injection pump  
Pump designation : PE6P100A820LS503-1  
EP type number : 0 411 806 198  
Governor  
Governor design. : RQ250/1000PA352-1  
Governor no. : 0 421 801 412

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AZ,CZ

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.85...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm<sup>3</sup>/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 16.00...17.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (163.0...169.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 13.20

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200

Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

### Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 350...390

### TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 14.20...14.30

2nd speed rpm : 700

Rack travel in m: 15.00...15.50

3rd speed rpm : 825

Rack travel in m: 14.40...14.80

### Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20

3rd pressure hPa : 300

Rack travel in m: 13.40...13.60

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900

Speed rpm : 700

Del.quantity cm3/ : 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 130.0...132.0

1000 s: (127.0...135.0)

### BREAKAWAY

#### 1st version

F10

1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1045...1060

### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

### LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 h  
Edition : 30.09.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 561  
Injection pump  
Pump designation : PE6P120A320RS519  
EP type number : 0 411 826 145  
Governor  
Governor design. : RQ275/1050PA899  
Governor no. : 0 421 801 460

Customer-spec. information  
Customer : RVI

Engine : MIHS 06.20.45

1st version kW : 185.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1110...1125  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.70  
Speed rpm : 275  
Rack travel in mm : 4.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 275...315

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.00...11.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 260

Rack travel in m: 10.50...10.60

3rd pressure hPa : 220

Rack travel in m: 9.60...9.80

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 700

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 159.0...165.0

1000 s: (156.0...168.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 104.0...106.0

1000 s: (101.0...109.0)

#### BREAKAWAY

##### 1st version

F12

1mm rack travel less than

full load rack tr: -1.00

Speed rpm : 1110...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0

1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.90...6.10

Del.quantity cm<sup>3</sup>/ : 12.0...18.0

1000 s: (9.0...21.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 c  
Edition : 07.04.89  
Replaces : 4.85  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 723  
  
Injection pump  
Pump designation : PE6P110A32OLS3805  
EP type number : 0 411 816 718  
Governor  
Governor design. : RQ300/1150PA187-2R  
Governor no. : 0 421 801 112

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 158.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1150  

---

Rack travel in mm : 12.50...12.60  

---

Del. quantity cm<sup>3</sup>/ : 12.2...12.4  

---

100 s: (11.9...12.6)  

---

Spread cm<sup>3</sup> : 0.4  

---

100 s: (0.7)  

---

2nd speed rpm : 300.0  
Rack travel in mm : 8.3...8.5  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.2)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 600  
Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del. quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 14.2

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1190...1200

2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.90  
Speed rpm : 300  
Rack travel in mm : 8.30...8.50  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 600  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 114.0...118.0  
1000 s: (111.0...121.0)  
Spread cm3 : 6.00  
1000 s: (9.)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 c 1  
Edition : 4.4.89  
Replaces : 22.10.86  
Test oil : ISO-4113

Combination no. : 0 401 846 749

Injection pump  
Pump designation : PE6P110A320LS3805  
EP type number : 0 411 816 718  
Governor  
Governor design. : RQ300/1150PA187-6  
Governor no. : 0 421 801 155

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 421

1st version kW : 159.0  
Rated speed : 2300  
2nd version kW : 159.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F15

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6-3-5-2-4-1

Phasing : 0-45-120-165-240-285  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 11.70...11.80  
Del.quantity cm<sup>3</sup>/ : 13.3...13.5  
100 s: (13.0...13.7)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.8)

2nd speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Del.quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s: (0.9...2.0)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.8)

1st speed rpm : 1150  
Rack travel in mm : 12.5...12.6  
Del.quantity cm<sup>3</sup>/ : 12.8...13.0\*  
100 s: (12.5...13.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.8)  
2nd speed rpm : 300  
Rack travel in mm : 8.30...8.50  
Del.quantity cm<sup>3</sup>/ : 1.2...1.8 \*  
100 s: (-)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 650  
Rack travel in mm : 13.20...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del.quantity : 133.0...135.0  
1000 : (130.5...137.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## 2nd version

Speed rpm : 1150  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)  
Spread cm3 : 4.0  
1000 s: (8.0)

## RATED SPEED

### 1st version

#### Setting point:

Speed rpm : 650  
Rack travel in mm : 13.6

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

### 2nd version

#### Setting point:

Speed rpm : 650  
Rack travel in mm : 13.6

#### Testing:

1st rack travel in: 11.50  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

### LOW IDLE 1

#### Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 7.90

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Rack travel in mm : 2.00  
Speed rpm : 410...440

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 112.0...116.0  
1000 s: (109.0...119.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

## 2nd version

Speed rpm : 600  
Del.quantity cm3/ : 120.0...124.0  
1000 s: (117.0...127.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

## RACK STOP ADJUSTMENT

Speed rpm : 600

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1195...1210

### 2nd version

1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1195...1210

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

## Remarks:

Version 1: Without return-flow  
restriction  
Version 2: With return-flow restriction

\* Version 2

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 c 3  
Edition : 07.04.89  
Replaces : 4.85  
Test oil : ISO-4113

Combination no. : 0 401 846 755

Injection pump  
Pump designation : PE6P110A320LS3805  
EP type number : 0 411 816 718  
Governor  
Governor design. : RQ300/1150PA187-8  
Governor no. : 0 421 801 180

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 148.0  
Rated speed : 2300  
2nd version kW : 148.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F17

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 12.40...12.50  
Del.quantity cm3/ : 12.9...13.1  
100 s: (12.6...13.3)  
Spread cm3 : 0.4  
100 s: (0.8)

2nd speed rpm : 300.0  
Rack travel in mm : 8.7...8.9  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.4)  
Spread cm3 : 0.4  
100 s: (0.7)

1st speed rpm : 1150  
Rack travel in mm : 12.6...12.7  
Del.quantity cm3/ : 12.7...12.9\*  
100 s: (12.4...13.2)  
Spread cm3 : 0.4  
100 s: (0.8)  
2nd speed rpm : 300  
Rack travel in mm : 8.50...8.70  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.4)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 650  
Rack travel in mm : 13.20...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150

Del.quantity : 129.0...131.0  
1000 : (126.5...133.5)  
Spread cm3 : 4.00  
1000 : (8.00)  
2nd version  
Speed rpm : 1150  
Del.quantity cm3/ : 127.0...129.0  
1000 s : (124.0...132.0)  
Spread cm3 : 4.00  
1000 s : (8.00)

#### RATED SPEED

##### 1st version

Setting point:  
Speed rpm : 650  
Rack travel in mm : 13.6

##### Testing:

1st rack travel in: 11.40  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

##### 2nd version

Setting point:  
Speed rpm : 650  
Rack travel in mm : 13.6

##### Testing:

1st rack travel in: 11.60  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.1

##### Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600

Del.quantity cm3/ : 105.0...109.0  
1000 s : (102.0...112.0)  
Spread cm3 : 6.00  
1000 s : (9.00)

##### 2nd version

Speed rpm : 600  
Del.quantity cm3/ : 117.0...121.0  
1000 s : (114.0...124.0)  
Spread cm3 : 6.00  
1000 s : (9.00)

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1190...1200

##### 2nd version

1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s : (126.0...154.0)

##### Remarks:

See VDT-I-401/102.

Version 1: Without return-flow  
restriction

Version 2: With return-flow restriction

\* Version 2

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 q  
Edition : 31.03.89  
Replaces : 12.6.87  
Test oil : ISO-4113

Combination no. : 0 401 846 759

Injection pump  
Pump designation : PE6P110A32ORS3108Y  
EP type number : 0 411 816 729  
Governor  
Governor design. : RQV250...1100PA649  
Governor no. : 0 421 815 346

Customer-spec. information  
Customer : VOLVO

Engine : THD100EC

1st version kW : 180.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 11.10...11.20  
Del.quantity cm<sup>3</sup>/ : 13.8...14.0  
100 s: (13.5...14.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

2nd speed rpm : 250.0  
Rack travel in mm : 5.2...5.4  
Del.quantity cm<sup>3</sup>/ : 3.0...3.4  
100 s: (2.7...3.6)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

(B) Setting of injection pump  
with governor

GUIDE SLEEVE TRAVEL  
1st speed rpm : 250  
travel mm : 1.10...1.30  
2nd speed rpm : 500  
travel mm : 4.10...4.90  
3rd speed rpm : 700  
travel mm : 6.30...6.70  
4th speed rpm : 950  
travel mm : 6.30...6.70  
5th speed rpm : 1100  
travel mm : 7.00...7.50

GUIDE SLEEVE POSITION  
Control-lever position  
Degree: -1  
Speed rpm : 1175  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 900  
Del.quantity : 138.0...140.0  
1000 : (135.0...143.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 10.10  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40

#### CONSTANT REGULATION

Speed rpm : 250...425

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.10...11.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 275  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 400  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 105.5...108.5  
1000 s: (103.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 30.0...34.0  
1000 s: (27.5...36.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 q1  
Edition : 07.03.88  
Replaces : 12.6.87  
Test oil : ISO-4113

Combination no. : 0 401 846 760

Injection pump  
Pump designation : PE6P110A320RS3108X  
EP type number : 0 411 816 730  
Governor  
Governor design. : RQV250...1100PA649  
Governor no. : 0 421 813 346

Customer-spec. information  
Customer : VOLVO

Engine : THD100ED

1st version kW : 203.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.30

2nd speed rpm : 500  
travel mm : 4.10...4.90

3rd speed rpm : 700  
travel mm : 6.30...6.70

4th speed rpm : 950  
travel mm : 6.30...6.70

5th speed rpm : 1100  
travel mm : 7.00...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread        cm<sup>3</sup> : 4.00  
              1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 11.10  
Speed        rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed        rpm : 1225...1255  
4th rack travel in: 1350  
Speed        rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed        rpm : 100  
Minimum rack travel: 6.70  
Speed        rpm : 250  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed        rpm : 250...425

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed        rpm : 500  
Pressure     hPa : 900  
Rack travel   mm : 12.10...12.20

##### Measurement

Speed        1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.40  
2nd pressure hPa : 275  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 650  
Rack travel in m: 11.70...11.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed        rpm : 700  
Del.quantity cm<sup>3</sup>/ : 105.5...108.5  
              1000 s: (103.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed        rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
              1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed        rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 30.0...34.0  
              1000 s: (27.5...36.5)  
Spread       cm<sup>3</sup> : 3.00  
              1000 s: (6.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 o 1  
 Edition : 07.04.89  
 Replaces : 4.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 762  
 Injection pump  
 Pump designation : PE6P110A32OLS3805-10  
 EP type number : 0 411 816 740  
 Governor  
 Governor design. : RQ300/1000PA187  
 Governor no. : 0 421 801 182

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 140.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 12.0...12.2

100 s: (11.7...12.5)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 120.5...122.5

1000 : (117.5...125.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.60

Speed rpm : 1040...1050

2nd rack travel in: 4.00  
Speed rpm : 1075...1105

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 102.0...106.0  
1000 s: (99.0...109.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 8,0 m 3  
Edition : 09.03.87  
Replaces : 4.85  
Test oil : ISO-4113

Combination no. : 0 401 846 775

Injection pump  
Pump designation : PE6P110A720RS3076  
EP type number : G 411 816 720  
Governor  
Governor design. : RQ750PA528  
Governor no. : 0 421 801 126

Customer-spec. information  
Customer : SCANIA

Engine : DS8 42

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
: (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.5

100 s: (0.7)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 117.0...119.0

1000 : (115.0...121.0)

Spread cm3 : 5.00

1000 : (7.00)

## RATED SPEED

### 1st version

#### Testing:

1st rack travel in: 10.90

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 773...783

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 750...755

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 190.0...240.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

## HIGH IDLE

### 1st version

Rack travel in mm : 4.90...5.10

Remarks:

:

#### ADDITIONAL INFORMATION

Check and set without RÖBO diaphragam

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 22, 1983

Engine start of delivery: 18° BTDC

Firing sequence of engine:  
1-5-3-6-2-4.

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 r  
Edition : 07.04.89  
Replaces : 31.7.87  
Test oil : ISO-4113

Combination no. : 0 401 846 805

Injection pump  
Pump designation : PE6P110A320LS3814-10  
EP type number : 0 411 816 741  
Governor  
Governor design. : RQ300/1150PA187-6  
Governor no. : 0 421 801 155

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 159.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 13.2...13.4

100 s: (12.9...13.6)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.3...8.5

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.20...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 132.0...134.0

1000 : (129.5...136.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.50

Speed rpm : 1190...1200

2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.30...8.50  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 110.0...114.0  
1000 s: (107.0...117.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

: KÄßBOHRER

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,1 a  
 Edition : 07.04.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 813  
 Injection pump  
 Pump designation : PE6P120A32ORS3165  
 EP type number : 0 411 826 747  
 Governor  
 Governor design. : RQV300...1050PA657-2  
 Governor no. : 0 421 813 419

Customer-spec. information  
 Customer : VOLVO/B

Engine : TD121K

1st version kW : 228.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 12.30...12.40  
 Del.quantity cm3/ : 21.7...21.9  
 100 s: (21.4...22.2)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.5...4.7  
 Del.quantity cm3/ : 1.7...2.1  
 100 s: (1.4...2.4)  
 Spread cm3 : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 300  
 travel mm : 1.60...1.80  
 2nd speed rpm : 450  
 travel mm : 3.60...4.00  
 3rd speed rpm : 700  
 travel mm : 6.40...6.60  
 4th speed rpm : 950  
 travel mm : 6.40...6.60  
 5th speed rpm : 1110  
 travel mm : 7.80...8.00

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1000

Del.quantity : 217.0...219.0  
1000 : (214.0...222.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1105...1115  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 300  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 300...420

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 125  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 655  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 217.0...223.0  
1000 s: (215.0...225.0)

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...270.0  
1000 s: (236.0...274.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...24.5)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s  
Edition : 07.04.89  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 401 846 823

Injection pump  
Pump designation : PE6P110A320LS3835  
EP type number : 0 411 816 749  
Governor  
Governor design. : RQ300/900PA187-14  
Governor no. : 0 421 801 357

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 150.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.20...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.50

Speed rpm : 940...950

2nd rack travel in: 4.00  
Speed rpm : 985...1015  
4th rack travel in: 1100  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.30  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 a  
Edition : 31.03.89  
Replaces : 7.1.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 827  
  
Injection pump  
Pump designation : PE6P120A32ORS3178  
EP type number : 0 411 826 752  
Governor  
Governor design. : RQV250...950PA657-11  
Governor no. : 0 421 813 568

Customer-spec. information  
Customer : VOLVO

Engine : TD122F

1st version kW : 257.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
                  : (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 3.60...4.20

3rd speed rpm : 700

travel mm : 6.40...6.60

4th speed rpm : 985

travel mm : 8.20...8.40

5th speed rpm : 1060

travel mm : 9.60...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 12.00  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 100  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 570  
Rack travel in m: 12.70...12.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 163.0...165.0  
1000 s: (160.0...168.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 17.5...22.5  
1000 s: (14.5...25.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 c  
Edition : 17.02.89  
Replaces : 5.8.88  
Test oil : ISO-4113

Combination no. : 0 401 846 860

Injection pump  
Pump designation : PE6P120A32ORS3200  
EP type number : 0 411 826 766  
Governor  
Governor design. : RQV250...1000PA808-1  
Governor no. : 0 421 813 660

Customer-spec. information  
Customer : ENASA

Engine : 96 R1 BX

1st version kW : 265.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.3...3.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40

2nd speed rpm : 350  
travel mm : 2.10...2.60

3rd speed rpm : 700  
travel mm : 4.70...5.30

4th speed rpm : 1055  
travel mm : 7.90...8.10

5th speed rpm : 1145  
travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1200

Del.quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 10.90  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.00  
Speed rpm : 250  
Rack travel in mm : 3.30...3.70

#### CONSTANT REGULATION

Speed rpm : 250...330

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.90...12.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 680

Rack travel in m: 11.30...11.40

3rd pressure hPa : 420

Rack travel in m: 9.50...9.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 900  
Del.quantity cm3/ : 244.0...250.0  
1000 s: (241.0...253.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 149.0...152.0  
1000 s: (146.5...154.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (151.0...179.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 e  
Edition : 17.02.89  
Replaces : 11.7.88  
Test oil : ISO-4113

Combination no. : 0 401 846 861

Injection pump  
Pump designation : PE6P120A320RS3176-1  
EP type number : 0 411 826 767  
Governor  
Governor design. : RQV250...1050PA808  
Governor no. : 0 421 813 553

Customer-spec. information  
Customer : ENASA

Engine : 96 R1 AX

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 21.2...21.4

100 s : (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 4.2...4.4  
Del.quantity cm<sup>3</sup>/ : 2.5...3.1  
100 s : (2.2...3.4)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40  
2nd speed rpm : 350  
travel mm : 2.10...2.60  
3rd speed rpm : 700  
travel mm : 4.50...5.10  
4th speed rpm : 1095  
travel mm : 8.00...8.20  
5th speed rpm : 1200  
travel mm : 9.20...9.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1180  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h: 900  
Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.20...4.40

#### CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.30  
2nd pressure hPa : 390  
Rack travel in m: 11.90...12.00  
3rd pressure hPa : 160  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm3/ : 215.0...221.0  
1000 s: (212.0...224.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 151.0...153.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (151.0...179.0)  
Rack travel in mm : 19.50...21.00

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 c1  
Edition : 29.03.89  
Replaces : 16.6.88  
Test oil : ISO-4113

Combination no. : 0 401 846 879

Injection pump  
Pump designation : PE6P120A720RS3192  
EP type number : 0 411 826 761  
Governor  
Governor design. : RGV300...900PA857-1  
Governor no. : 0 421 813 683

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8210.42.101

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50  
: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.70...0.90

2nd speed rpm : 550

travel mm : 4.00...4.60

3rd speed rpm : 800

travel mm : 6.60...6.90

4th speed rpm : 900

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 950

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 57...65

### Testing:

1st rack travel in: 12.10  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 4...12

### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

### CONSTANT REGULATION

Speed rpm : 370...490

Aneroid/Altitude  
Compensator Test

### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 520  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 330  
Rack travel in m: 9.80...10.20

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 111.0...113.0  
1000 s: (108.0...116.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 940...950

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 235.0...265.0  
1000 s: (231.0...269.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 18.0...24.0  
1000 s: (15.0...27.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s 9  
 Edition : 07.04.89  
 Replaces : 24.6.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 880  
 Injection pump  
 Pump designation : PE6P110A320LS3835-1  
 EP type number : 0 411 816 755  
 Governor  
 Governor design. : RQ300/1050PA187-19  
 Governor no. : 0 421 801 428

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 160.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.6...12.8

100 s: (12.2...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.3...8.6

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.80...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 126.0...128.0

1000 : (122.5...130.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.1

Testing:

1st rack travel in: 12.00

Speed rpm : 1090...1100

2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.80...7.20  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
2nd speed rpm : 600  
3rd speed rpm : 900

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1050  
Del.quantity cm3/ : 138.0...142.0  
1000 s: (135.0...145.0)  
Spread cm3 : 7.00  
1000 s: (10.)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SSC 10,5 e  
Edition : 07.02.89  
Replaces : 5.8.88  
Test oil : ISO-4113

Combination no. : 0 401 846 884

Injection pump  
Pump designation : PE6P130A320LS3210  
EP type number : 0 411 836 713  
Governor  
Governor design. : RQV400...750PA607  
Governor no. : 0 421 813 313

Customer spec. information  
Customer : SSCM

Engine : UD 25.L6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 38.8...39.1

100 s: (38.4...39.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.3...3.7)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
travel mm : 0.20...0.50

2nd speed rpm : 500  
travel mm : 1.90...2.10

3rd speed rpm : 650  
travel mm : 1.90...2.10

4th speed rpm : 750  
travel mm : 4.50...5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 388.0...391.0

1000 : (384.5...394.5)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

### 1st version

Testing:

1st rack travel in: 13.50

Speed rpm : 750...755

2nd rack travel in: 4.00  
Speed rpm : 776...789  
4th rack travel in: 950  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 650...750

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 750...755

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (23.0...37.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

:

#### APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s11  
 Edition : 07.02.89  
 Replaces : 9.1.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 889  
 Injection pump  
 Pump designation : PE6P110A320LS3835-1  
 EP type number : 0 411 816 755  
 Governor  
 Governor design. : RQV300...900PA524-10  
 Governor no. : 0 421 813 549

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 441

1st version kW : 150.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.7...8.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.40

2nd speed rpm : 500  
 travel mm : 3.50...3.80

3rd speed rpm : 950  
 travel mm : 8.30...8.70

4th speed rpm : 1000  
 travel mm : 9.40...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 950

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread        cm<sup>3</sup> : 4.00  
              1000 : (8.00)

Remarks:

#### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

#### Testing:

1st rack travel in: 11.90  
Speed        rpm : 955...965  
2nd rack travel in: 4.00  
Speed        rpm : 1000...1030  
4th rack travel in: 1100  
Speed        rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 17...25

#### Testing:

Speed        rpm : 200  
Minimum rack trave: 9.50  
Speed        rpm : 300  
Rack travel in mm : 8.00...8.20

#### CONSTANT REGULATION

Speed        rpm : 300...450

#### START CUT-OUT

Speed        1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed        rpm : 600  
Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
              1000 s: (119.0...129.0)  
Spread        cm<sup>3</sup> : 6.00  
              1000 s: (8.)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed        rpm : 955...965

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
              1000 s: (126.0...154.0)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BA0 7,1 a  
Edition : 29.03.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 892  
Injection pump  
Pump designation : PE6P110A320RS3219  
EP type number : 0 411 816 759  
Governor  
Governor design. : RQV325...1500PA901  
Governor no. : 0 421 813 719

Customer-spec. information  
Customer : BAUDOUIN

Engine : 6F12 SR-SRY

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 3- 6- 5- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 14.30...14.40  
Del.quantity cm3/ : 21.7...22.0  
100 s: (21.4...22.2)  
Spread cm3 : 0.4  
100 s: (0.7)

2nd speed rpm : 325.0  
Rack travel in mm : 5.1...5.3  
Del.quantity cm3/ : 2.2...2.7  
100 s: (1.9...2.9)  
Spread cm3 : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.00...1.40  
2nd speed rpm : 1100  
travel mm : 4.60...5.00  
3rd speed rpm : 1500  
travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1650  
Rack travel in mm : 7.50...10.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 900  
Del.quantity : 217.0...220.0  
1000 : (214.5...222.5)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control Lever  
position degrees: 49...57

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1680...1710  
4th rack travel in: 1800  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 325  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 370...480

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.30...14.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 13.30...13.40  
2nd pressure hPa : 300  
Rack travel in m: 13.60...13.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1500  
Del.quantity cm3/ : 201.0...208.0  
1000 s: (198.5...210.5)  
Spread cm3 : 8.00  
1000 s: (11.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 190.0...194.0  
1000 s: (187.5...196.5)

BREAKAWAY

G20

1st version  
1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1540...1550

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 22.0...27.0  
1000 s: (19.5...29.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:  
:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 L 4  
 Edition : 07.02.89  
 Replaces : 2.12.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 897

Injection pump  
 Pump designation : PE6P120A320LS3815-13  
 EP type number : 0 411 826 782  
 Governor  
 Governor design. : RQ300/1050PA840-1  
 Governor no. : 0 421 801 418

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 441 A

1st version kw : 191.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.30...12.50

Del.quantity cm3/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.4

Del.quantity cm3/ : 1.4...2.2

100 s: (1.1...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 190.0...192.0

1000 : (187.0...195.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 10.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

### Testing:

Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.10...5.40  
Rack travel in mm : 2.00  
Speed rpm : 365...405

### TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 1050  
Rack travel in m: 11.70...11.90  
3rd speed rpm : 700  
Rack travel in m: 12.70...12.90

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.30...12.50

### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 550  
Rack travel in m: 11.90...12.10  
3rd pressure hPa : 780  
Rack travel in m: 12.40...12.50 \*  
4th pressure hPa : 1100  
Rack travel in m: 12.65...12.75  
5th pressure hPa : -  
Rack travel in m: 9.60...9.90

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm3/ : 184.0...187.0  
1000 s: (181.0...190.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 700  
Del.quantity cm3/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm3 : 8.00  
1000 s: (-)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack travel: 10.70  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 a  
Edition : 29.03.89  
Replaces : 11.12.87  
Test oil : ISO-4113  
Combination no. : 0 401 848 082  
Injection pump  
Pump designation : PE8P110A520/5LS851  
EP type number : 0 411 818 046  
Governor  
Governor design. : RQ250/1150PA688  
Governor no. : 0 421 801 231

Customer-spec. information  
Customer : MAN

Engine : D2848T

1st version kW : 245.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

G23

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 14.3...14.5

100 s: (14.0...14.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 143.0...145.0

1000 : (140.5...147.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.80

Speed rpm : 1195...1210

2nd rack travel in: 4.00

Speed rpm : 1280...1310  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 310...350

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 700  
Rack travel in m: 10.80...11.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 290  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 230  
Rack travel in m: 10.00...10.20

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 135.0...141.0  
1000 s: (132.0...144.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 108.0...110.0  
1000 s: (105.5...112.5)  
Spread cm<sup>3</sup> : -  
1000 s: (7.50)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1195...1210

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 18.0...24.0  
1000 s: (15.5...26.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

: MAN-NR. 2-7353

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 b4  
 Edition : 10.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 715  
 Injection pump  
 Pump designation : PE8P120A920/5LS3804  
 EP type number : 0 411 828 705  
 Governor  
 Governor design. : RQ300/1200PA356  
 Governor no. : 0 421 801 070

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8280.02.000

1st version kW : 257.4  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 17.3...17.7

100 s: (17.0...18.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.8...3.6

100 s: (2.5...3.9)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 173.0...177.0

1000 : (170.0...180.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 15.8

Testing:

1st rack travel in: 8.30

Speed rpm : 1245...1260

2nd rack travel in: 4.00

Speed rpm : 1280...1310

4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 405...445

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 650  
Rack travel in m: 9.30...9.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1245...1260

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 b3  
Edition : 10.02.89  
Replaces : 5.85  
Test oil : ISO-4113

Combination no. : 0 401 848 718

Injection pump  
Pump designation : PE8P120A920/5LS3804  
EP type number : 0 411 828 705  
Governor  
Governor design. : RQV300...1200PA357  
Governor no. : 0 421 813 188

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8280.02.020

1st version kW : 257.4  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-  
7- 2

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 17.3...17.7

100 s: (17.0...18.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.8...3.6

100 s: (2.5...3.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.50

2nd speed rpm : 450  
travel mm : 2.60...3.30

3rd speed rpm : 900  
travel mm : 5.60...6.00

4th speed rpm : 1200  
travel mm : 7.90...8.10

5th speed rpm : 1500  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 173.0...177.0

1000 : (170.0...180.0)

Spread      cm<sup>3</sup> : 5.00  
             1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 54...62

Testing:  
1st rack travel in: 8.30  
Speed      rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed      rpm : 1315...1345  
4th rack travel in: 1450  
Speed      rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 8...16

Testing:  
Speed      rpm : 100  
Minimum rack trave: 7.50  
Speed      rpm : 300  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed      rpm : 340...445

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.30  
Speed      rpm : 1240...1250

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 b4  
Edition : 10.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 848 719  
Injection pump  
Pump designation : PE8P120A920/5LS3804  
EP type number : 0 411 828 705  
Governor  
Governor design. : RQ300/1200PA356  
Governor no. : 0 421 801 070

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8280.02.405

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 4- 3- 6- 5-  
                  7- 2

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 9.30...9.40  
Del. quantity cm<sup>3</sup>/ : 17.3...17.7  
                  100 s : (17.0...18.0)  
Spread cm<sup>3</sup> : 0.5  
                  100 s : (0.9)  
2nd speed rpm : 300.0  
Rack travel in mm : 5.9...6.1  
Del. quantity cm<sup>3</sup>/ : 2.8...3.6  
                  100 s : (2.5...3.9)  
Spread cm<sup>3</sup> : 0.8  
                  100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 650  
Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Del. quantity : 173.0...177.0  
                  1000 : (170.0...180.0)  
Spread cm<sup>3</sup> : 5.00  
                  1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 650  
Rack travel in mm : 15.8

Testing:  
1st rack travel in: 8.30  
Speed rpm : 1245...1260  
2nd rack travel in: 4.00  
Speed rpm : 1280...1310  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

## Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 400...440

## TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.30...9.40

2nd speed rpm : 650

Rack travel in m: 9.30...9.50

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1245...1260

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

## APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 b6  
 Edition : 10.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 731  
 Injection pump  
 Pump designation : PE8P120A920/5LS3804  
 EP type number : 0 411 828 705  
 Governor  
 Governor design. : RGV300...1200PA506  
 Governor no. : 0 421 813 249

Customer-spec. information  
 Customer : IVECO-FIAT

1st version kW : 331.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness : 8.00X2.00X1000  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 3- 6- 5-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
 Rack travel in mm : 11.60...11.70  
 Del.quantity cm3/ : 24.3...24.7  
 100 s: (24.0...25.0)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm3/ : 1.9...2.5  
 100 s: (1.6...2.8)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.30...1.70  
 2nd speed rpm : 450  
 travel mm : 2.80...3.40  
 3rd speed rpm : 900  
 travel mm : 5.50...5.90  
 4th speed rpm : 1200  
 travel mm : 7.70...7.90  
 5th speed rpm : 1500  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1250  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 700  
 Del.quantity : 243.0...247.0  
 1000 : (240.0...250.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 10.60

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1360...1390

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed rpm : 100

Minimum rack travel: 6.50

Speed rpm : 300

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 310...405

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.50...8.60

2nd pressure hPa : 435

Rack travel in m: 10.80...10.90

3rd pressure hPa : 350

Rack travel in m: 9.20...9.50

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 1200

Del. quantity cm<sup>3</sup>/ : 160.0...164.0

1000 s: (157.0...167.0)

## BREAKAWAY

H04

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1240...1250

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

7- 2

## Note remarks

Test sheet : FIA 17,2 c1  
 Edition : 10.02.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 848 736

Injection pump  
 Pump designation : PE8P120A920/5LS3812  
 EP type number : 0 411 828 709  
 Governor  
 Governor design. : RQV300...1200PA357  
 Governor no. : 0 421 813 188

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8281.02.001

1st version kW : 257.4  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 3- 6- 5-

H05

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

---

Rack travel in mm : 9.30...9.40

---

Del.quantity cm<sup>3</sup>/ : 17.3...17.7

---

100 s : (17.0...18.0)

---

Spread cm<sup>3</sup> : 0.5

---

100 s : (0.9)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 2.8...3.6  
 100 s : (2.5...3.9)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (0.9)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.30...1.70  
 2nd speed rpm : 450  
 travel mm : 2.70...3.40  
 3rd speed rpm : 900  
 travel mm : 5.70...6.10  
 4th speed rpm : 1200  
 travel mm : 8.20...8.40  
 5th speed rpm : 1500  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 173.0...177.0  
 1000 : (170.0...180.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

### Setting point:

Speed rpm : 1200  
Rack travel in mm : 16.5

### Testing:

1st rack travel in: 8.30  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

## CONSTANT REGULATION

Speed rpm : 330...430

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1240...1250

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



## Note remarks

Combination no. : 0 401 848 762

Customer-spec. information  
Customer : DAIMLER-BENZ

1st version kW : 243.0  
Rated speed : 2300

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 4.00...4.10
                  : (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order      : 8- 7- 2- 6- 3- 5-
                  : 4- 1
```

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance  $\pm$  - ° : 0.50 (0.75)

Time to cyl. no. : 8

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/	: 15.9...16.1
100 s:	(15.6...16.4)
Spread	cm3 : 0.5
100 s:	(0.9)

```

2nd speed      rpm : 300.0
Rack travel in mm : 5.0...5.2
Del.quantity   cm3/ : 1.2...1.8
               100 s : (0.9...2.1)
Spread         cm3 : 0.8
               100 s : (1.2)

```

(B) Setting of injection pump  
with governor

1st speed	rpm	: 300
travel mm		: 1.40...1.60
2nd speed	rpm	: 800
travel mm		: 6.00...6.20
3rd speed	rpm	: 1200
travel mm		: 8.00...8.50
4th speed	rpm	: 1300
travel mm		: 9.70...10.30

Control-lever position  
Degree: -1  
Speed rpm : 1230  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1150  
Aneroid pressure h: 700  
Del.quantity : 159.0...161.0  
1000 : (156.0...164.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 46...54

#### Testing:

1st rack travel in: 9.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 15...23

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 700  
Rack travel in m: 11.00...11.20

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.00...10.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : 450  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 500

H08

Rack travel in m: 10.50...10.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 173.5...175.5  
1000 s: (170.5...178.5)  
Spread cm3 : 7.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm3 : 7.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

## Note remarks

Combination no. : 0 401 848 763

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422 LA

1st version kW : 276.0  
Rated speed : 2300

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 4.00...4.10
                   : (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order      : 8- 7- 2- 6- 3- 5-
                   : 4- 1
```

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance  $\pm$  <sup>0</sup> : 0.50 (0.75)

Time to cyl. no. : 8

1st speed      rpm : 1150

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 17.5...17.7

100 s: (17.2...18.0)

Spread            cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed      rpm    : 300.0

Rack travel in mm : 5.1...5.3

Del.quantity cm<sup>3</sup>/ : 1.2...2.0

100 s: (0.9...2.3)

Spread  $\text{cm}^3$  : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

1st speed rpm : 300  
travel mm : 1.40...1.60

```
2nd speed      rpm      : 800
  travel mm    : 6.00...6.20
```

3rd speed rpm : 1200  
travel mm : 8.00...8.50

4th speed rpm : 1300  
travel mm : 9.70...10.30

## Control-lever position

Degree:  $-1$ 

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 700  
Del.quantity : 175.0...177.0  
1000 : (172.0...180.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 49...57

#### Testing:

1st rack travel in: 10.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 13...21

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.40

##### Measurement

Speed 1/min : 500

1st pressure hPa : 410  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 490  
Rack travel in m: 11.10...11.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 187.0...190.0  
1000 s: (184.0...193.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 137.0...139.0  
1000 s: (134.0...142.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 c 4  
 Edition : 31.03.89  
 Replaces : 9.10.87  
 Test oil : ISO-4113

Combination no. : 0 401 848 789

Injection pump  
 Pump designation : PE8P110A320LS3842-1  
 EP type number : 0 411 818 716  
 Governor  
 Governor design. : RQ300/1050PA827-3K  
 Governor no. : 0 421 803 095

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 13.2...13.4

100 s: (12.9...13.6)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...9.0

Del.quantity cm3/ : 1.5...2.1  
 100 s: (1.2...2.3)

Spread cm3 : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.30...1.50

2nd speed rpm : 500  
 travel mm : 5.50...5.70

3rd speed rpm : 900  
 travel mm : 6.90...7.20

4th speed rpm : 1050  
 travel mm : 7.60...7.90

5th speed rpm : 1100  
 travel mm : 10.10...10.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.70...15.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050

Del.quantity : 132.0...134.0  
1000 : (129.5...136.5)  
Spread cm3 : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 15.2

Testing:

1st rack travel in: 11.90  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.9

Testing:

Speed rpm : 200  
Minimum rack trave: 10.50  
Speed rpm : 300  
Rack travel in mm : 8.80...9.00  
Rack travel in mm : 2.00  
Speed rpm : 450...490  
Speed rpm : 550  
Maximum rack trave: 1.80

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 600  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 900  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 119.0...122.0  
1000 s: (116.0...125.0)  
Spread cm3 : 8.00  
1000 s: (11.0)  
Speed rpm : 900  
Del.quantity cm3/ : 130.0...134.0  
1000 s: (127.0...137.0)  
Spread cm3 : 8.00  
1000 s: (11.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 d 5  
 Edition : 14.04.89  
 Replaces : 11.11.88  
 Test oil : ISO-4113

Combination no. : 0 401 848 793

Injection pump  
 Pump designation : PE8P110A320LS3842  
 EP type number : 0 411 818 714  
 Governor  
 Governor design. : RGV300..1050PA524-12  
 Governor no. : 0 421 813 679

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 192.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 11.7...11.9

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.7

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.50

2nd speed rpm : 800

travel mm : 5.60...6.00

3rd speed rpm : 1110

travel mm : 7.80...8.40

4th speed rpm : 1150

travel mm : 8.80...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 117.0...119.0

1000 : (114.5...121.5)

Spread      cm<sup>3</sup> : 4.00  
             1000 : (8.00)

Remarks:

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 10.50  
Speed      rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed      rpm : 1135...1165  
4th rack travel in: 1250  
Speed      rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed      rpm : 200  
Minimum rack trave: 10.50  
Speed      rpm : 300  
Rack travel in mm : 8.40...8.70

#### CONSTANT REGULATION

Speed      rpm : 300...450

#### START CUT-OUT

Speed      1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed      rpm : 600  
Del.quantity cm<sup>3</sup>/ : 98.0...104.0  
             1000 s: (95.0...107.0)  
Spread      cm<sup>3</sup> : 6.00  
             1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed      rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed      rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
             1000 s: (136.0...164.0)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 d 6  
 Edition : 29.03.89  
 Replaces : 1.7.88  
 Test oil : ISO-4113

Combination no. : 0 401 848 795

Injection pump  
 Pump designation : PE8P110A320LS3842  
 EP type number : 0 411 818 714  
 Governor  
 Governor design. : RQV300..1050PA884-1  
 Governor no. : 0 421 813 686

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.4...8.8  
 Del.quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.3)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.40  
 2nd speed rpm : 800  
 travel mm : 5.80...6.20  
 3rd speed rpm : 1100  
 travel mm : 8.20...8.60  
 4th speed rpm : 1150  
 travel mm : 9.10...9.70

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1085  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del.quantity : 126.0...128.0  
 1000 : (123.5...130.5)

Spread      cm<sup>3</sup>    : 4.00  
             1000    : (7.50)

Remarks:

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 11.70  
Speed      rpm    : 1090...1100  
2nd rack travel in: 4.00  
Speed      rpm    : 1150...1180  
4th rack travel in: 1250  
Speed      rpm    : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed      rpm    : 200  
Minimum rack trave: 10.00  
Speed      rpm    : 300  
Rack travel in mm : 6.80...7.00

#### CONSTANT REGULATION

Speed      rpm    : 300...400

#### START CUT-OUT

Speed      1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed      rpm    : 1050  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
             1000 s: (133.0...143.0)  
Spread      cm<sup>3</sup>    : 7.00  
             1000 s: (10.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed      rpm    : 1090...1100

#### STARTING FUEL DELIVERY

Speed      rpm    : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
             1000 s: (136.0...164.0)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAO 14,5 b  
Edition : 21.04.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 848 803

Injection pump  
Pump designation : PE8P120A520/4LS3850  
EP type number : 0 411 828 723  
Governor  
Governor design. : RQV250...900PA668-8  
Governor no. : 0 421 813 742

Customer spec. information  
Customer : DAEWOO

Engine : D 2848 TI

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness : 6.00X1.50X1000  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)

Rack travel in mm : 9.00...12.00

H17

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.30...1.70

2nd speed rpm : 650  
travel mm : 5.80...6.20

3rd speed rpm : 900  
travel mm : 7.80...8.00

4th speed rpm : 1200  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 940

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 199.0...201.0

1000 : (196.0...204.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

Navy

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 10.00  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 415...475

## START CUT-OUT

Speed 1/min : 220 (240)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 940...950

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 185.0...205.0  
1000 s: (181.0...209.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

## APPLICATION

H18

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 17,4 b  
 Edition : 29.03.89  
 Replaces : 11.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 160  
 Injection pump  
 Pump designation : PE10P100A320LS842  
 EP type number : 0 411 809 134  
 Governor  
 Governor design. : RQ300/1150PA187-2R  
 Governor no. : 0 421 801 112

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 403

1st version kW : 259.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1150

Del.quantity : 115.5...117.5

1000 : (113.5...119.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.2

### Testing:

1st rack travel in: 11.00

Speed rpm : 1195...1210

2nd rack travel in: 4.00

Speed rpm : 1235...1265

4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.40...7.60  
Rack travel in mm : 2.00  
Speed rpm : 410...450

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 100.5...105.5  
1000 s: (98.5...107.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

#### RACK STOP ADJUSTMENT

Speed rpm : 650

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (121.0...149.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 c  
Edition : 07.02.89  
Replaces : 22.1.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 849 734  
  
Injection pump  
Pump designation : PE10P120A520/4LS3843  
EP type number : 0 411 829 707  
Governor  
Governor design. : RQ300/1000PA837  
Governor no. : 0 421 801 372

Customer-spec. information  
Customer : MAN

Engine : D2840LF/460

1st version kW : 338.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00  
: (3.85...4.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 204.0...206.0

1000 : (201.0...209.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.30  
Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 600  
Rack travel in m: 11.80...12.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

#### 1st pressure hPa : -

Rack travel in m: 10.10...10.20  
2nd pressure hPa : 380  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 500  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7778



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 c1  
Edition : 07.02.89  
Replaces : 22.1.88  
Test oil : ISO-4113

Combination no. : 0 401 849 735

Injection pump  
Pump designation : PE10P120A520/4LS3843  
EP type number : 0 411 829 707  
Governor  
Governor design. : RQV300...1000PA838  
Governor no. : 0 421 813 585

Customer-spec. information  
Customer : MAN

Engine : D2840LF/460

1st version kW : 338.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00  
: (3.85...4.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.40  
2nd speed rpm : 500  
travel mm : 3.10...3.50  
3rd speed rpm : 850  
travel mm : 6.60...6.90  
4th speed rpm : 1000  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000

Del.quantity : 204.0...206.0  
1000 : (201.0...209.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 335...445

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 380  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 500  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version

H24

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MAN-NR. 2-7779

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 17,4 c1  
Edition : 28.04.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 849 744  
  
Injection pump  
Pump designation : PE10P120A520/4LS3833  
EP type number : 0 411 829 706  
Governor  
Governor design. : RQ750PA663-7  
Governor no. : 0 421 801 331

Customer-spec. information  
Customer : MAN

Engine : D2840 LE

1st version kW : 352.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
: (4.15...4.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 11.30

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 790...803

4th rack travel in: 950

Speed rpm : 0.00...1.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:  
: MAN-NR. 2-7975

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 21,6 a4  
Edition : 24.02.89  
Replaces : 6.4.88  
Test oil : ISO-4113

Combination no. : 0 401 870 091

Injection pump  
Pump designation : PE12P120A520/5RS428-  
1

EP type number : 0 411 820 034

Governor

Governor design. : RSUV300...900POA320-  
1

Governer no. : 0 421 829 107

Customer-spec. information

Customer : MWM

Engine : TBD 234 V12

1st version kW : 600.0

Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 9- 10- 5- 6-  
11- 12- 3- 4- 7- 8

Phasing : 0-30-60-90-120-150-  
180-210-240-270-300-  
330

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 249.0...251.0

1000 : (246.0...254.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 65...73

Testing:

1st rack travel in: 12.70  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 965...995  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3  
Speed rpm : 300  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 320...380

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 450  
Rack travel in m: 13.70...13.80  
3rd speed rpm : 280  
Rack travel in m: 14.90...15.50

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 o11  
 Edition : 21.04.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 401 876 316

Injection pump  
 Pump designation : PE6P100A72ORS447  
 EP type number : 0 411 806 191  
 Governor  
 Governor design. : RSV250...1200P5A509-  
 1  
 Governor no. : 0 421 833 199

Customer-spec. information  
 Customer : DAF

Engine : DHT 825

1st version kW : 162.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 11.8...12.0  
 100 s: (11.6...12.2)

Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm3/ : 0.8...1.2  
 100 s: (0.5...1.4)

Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 700  
 Del.quantity : 118.5...120.5  
 1000 : (116.5...122.5)

Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 58...66

Testing:  
 1st rack travel in: 10.40  
 Speed rpm : 1240...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1300...1330

3rd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.8  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 540...640

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 400  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 300  
Rack travel in m: 11.90...12.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 315  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 225  
Rack travel in m: 10.50...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 92.5...96.5  
1000 s: (90.0...99.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 8.0...12.0  
1000 s: (5.5...14.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 c  
 Edition : 24.02.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 401 876 321

Injection pump  
 Pump designation : PE6P110A320RS497  
 EP type number : 0 411 816 165  
 Governor  
 Governor design. : RSV200...1200P1A374-  
 1  
 Governor no. : 0 421 833 204

Customer-spec. information  
 Customer : VOLVO

Engine : TD71A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 11.6...11.8  
 100 s: (11.3...12.1)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 200.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (-)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 116.0...118.0  
 1000 : (113.0...121.0)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 51...59

Testing:

1st rack travel in: 10.80  
 Speed rpm : 1210...1220

2nd rack travel in: 4.00  
 Speed rpm : 1240...1270

4th rack travel in: 1410

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 5.0

Speed rpm : 200

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 280...340

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 675

Rack travel in m: 11.60...11.70

3rd pressure hPa : 200

Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 82.0...85.0

1000 s: (79.0...88.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 160.0...190.0

1000 s: (160.0...190.0)

Rack travel in mm : 20.00...21.00

#### LOW IDLE

J04

Speed rpm : 200

Rack travel in mm : 5.40...5.60

Del.quantity cm3/ : 16.0...22.0

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 6,1 q  
Edition : 10.02.89  
Replaces : 9.12.88  
Test oil : ISO-4113

Combination no. : 0 401 876 327

Injection pump  
Pump designation : PE6P110A32ORS499  
EP type number : 0 411 816 169  
Governor  
Governor design. : RSV325...1400P2A374-  
3  
Governor no. : 0 421 833 220

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TAM61A

1st version kW : 220.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)

J05

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 12.0...12.2

100 s: (11.7...12.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 4.1...4.3

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 120.5...122.5

1000 : (117.5...125.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.10

Speed rpm : 1450...1460

2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1630  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 3.7  
Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 380...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.00...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 360  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 730  
Rack travel in m: 10.70...10..80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 1400  
Del.quantity cm3/ : 122.5...126.5  
1000 s: (119.5...129.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 54.5...58.5  
1000 s: (51.5...61.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f  
Edition : 24.02.89  
Replaces : 25.3.88  
Test oil : ISO-4113

Combination no. : 0 401 876 332

Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AX,

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 113.0...115.0

1000 : (111.0...117.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.90

Speed rpm : 790...800

2nd rack travel in: 4.00

Speed rpm : 825...855

3rd rack travel in: 4.00

Speed rpm : 835...865

4th rack travel in: 1000

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 11.90...12.00

2nd speed rpm : 450

Rack travel in m: 11.90...12.00

3rd speed rpm : 290

Rack travel in m: 13.20...13.80

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 790...800

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...280.0

1000 s: (256.0...284.0)

Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f1  
 Edition : 24.02.89  
 Replaces : 7.10.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332A  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 COMR 400

1st version kW : 125.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.40

Speed rpm : 1060...1065

2nd rack travel in: 4.00

Speed rpm : 1090...1120

3rd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 450  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 250  
Rack travel in m: 12.60...13.20

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1060...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f2  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332B  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 COML 4

1st version kW : 114.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.00

Speed rpm : 1010...1015

2nd rack travel in: 4.00

Speed rpm : 1040...1070

3rd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 450  
Rack travel in m: 11.00...11.10  
3rd speed rpm : 250  
Rack travel in m: 12.20...12.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1010...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f3  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332C  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 AI COEB 2

1st version kW : 113.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.60

Speed rpm : 905...910

2nd rack travel in: 4.00

Speed rpm : 935...965

3rd rack travel in: 4.00  
Speed rpm : 945...975  
4th rack travel in: 1100  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 290  
Rack travel in m: 12.80...13.40

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 905...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f4  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 332D  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 A1 COEB 1

1st version kW : 97.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.60...11.70

Del.quantity cm<sup>3</sup>/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 107.0...109.0

1000 : (105.0...111.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.60

Speed rpm : 755...760

2nd rack travel in: 4.00

Speed rpm : 780...810

3rd rack travel in: 4.00  
Speed rpm : 790...820  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 300  
Rack travel in m: 12.80...13.40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 755...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f5  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332E  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AOML 4

1st version kW : 158.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 16.2...16.4

100 s: (16.0...16.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 162.0...164.0

1000 : (160.0...166.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 13.10

Speed rpm : 960...965

2nd rack travel in: 4.00

Speed rpm : 1000...1030

3rd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 450  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 250  
Rack travel in m: 15.30...15.90

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 960...965

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f6  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332F  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 ADEA 2

1st version kW : 147.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 13.20

Speed rpm : 905...910

2nd rack travel in: 4.00

Speed rpm : 935...965

3rd rack travel in: 4.00  
Speed rpm : 945...975  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 450  
Rack travel in m: 14.20...14.30  
3rd speed rpm : 290  
Rack travel in m: 15.40...16.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 905...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f7  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332G  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AOEB 1

1st version kW : 146.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 16.7...16.9

100 s: (16.5...17.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 167.0...169.0

1000 : (165.0...171.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 13.40

Speed rpm : 755...760

2nd rack travel in: 4.00

Speed rpm : 780...810

3rd rack travel in: 4.00  
Speed rpm : 790...820  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 450  
Rack travel in m: 14.40...14.50  
3rd speed rpm : 300  
Rack travel in m: 15.60...16.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 755...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f8  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332H  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer spec. information  
 Customer : ENASA

Engine : 95 A1 COIB 4

1st version kW : 120.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.80

Speed rpm : 1010...1015

2nd rack travel in: 4.00

Speed rpm : 1040...1070

3rd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 450  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 250  
Rack travel in m: 13.00...13.60

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1010...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f9  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 332K  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AOIB 4

1st version kW : 165.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 13.20

Speed rpm : 960...965

2nd rack travel in: 4.00

Speed rpm : 1000...1030

3rd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 450  
Rack travel in m: 14.20...14.30  
3rd speed rpm : 250  
Rack travel in m: 15.40...16.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 960...965

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f10  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332L  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 A0IR 43

1st version kW : 166.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 16.3...16.5

100 s : (16.1...16.7)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s : (1.5...2.4)

Spread cm3 : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 13.10

Speed rpm : 1010...1015

2nd rack travel in: 4.00

Speed rpm : 1045...1075

3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 450  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 250  
Rack travel in m: 15.30...15.90

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1010...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f11  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 332M  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 9105.42.25.43

1st version kW : 132.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 10.70

Speed rpm : 965...975

2nd rack travel in: 4.00

Speed rpm : 1000...1030

3rd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 450  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 250  
Rack travel in m: 12.90...13.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 965...975

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f12  
Edition : 24.02.89  
Replaces : —  
Test oil : ISO-4113  
Combination no. : 0 401 876 332N  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer spec. information  
Customer : ENASA

Engine : 9100.14.25.32

1st version kW : 125.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values —

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

K03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control Lever

position degrees: 49...57

Testing:

1st rack travel in: 10.60

Speed rpm : 1010...1020

2nd rack travel in: 4.00

Speed rpm : 1045...1055

3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 250  
Rack travel in m: 12.80...13.40

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 1010...1020

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f13  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 332R  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 9100.04

1st version kW : 107.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

K05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.40

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 950...960

3rd rack travel in: 4.00  
Speed rpm : 960...990  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 450  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 250  
Rack travel in m: 12.60...13.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f14  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332S  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 9105.05

1st version kW : 86.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

K07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 11.6...11.8

100 s: (11.4...12.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 116.0...118.0

1000 : (114.0...120.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.10

Speed rpm : 760...770

2nd rack travel in: 4.00

Speed rpm : 775...805

3rd rack travel in: 4.00  
Speed rpm : 785...815  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 450  
Rack travel in m: 12.10...12.20  
3rd speed rpm : 290  
Rack travel in m: 13.30...13.90

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 760...770

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f15  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332T  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 9109.04

1st version kW : 140.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

K09

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 12.00

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 945...975

3rd rack travel in: 4.00  
Speed rpm : 955...985  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 9.40...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 450  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 250  
Rack travel in m: 14.40...15.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g1  
Edition : 17.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 333A  
Injection pump  
Pump designation : PE6P120A32ORS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RSV250...1100POA533  
Governor no. : 0 421 833 274

Customer-spec. information  
Customer : ENASA

Engine : 96 T1A0

1st version kW : 240.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.80

Speed rpm : 1115...1120  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
3rd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 450  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 250  
Rack travel in m: 13.00...13.60

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1115...1120

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g2  
 Edition : 17.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 333B  
 Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1A0

1st version kW : 228.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.60

Speed rpm : 1110...1115  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
3rd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Dimension a mm : 2.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 250  
Rack travel in m: 12.80...13.40

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 1110...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g3  
 Edition : 17.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 333C  
 Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1A0

1st version kW : 209.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.20

Speed rpm : 905...910  
2nd rack travel in: 4.00  
Speed rpm : 960...990  
3rd rack travel in: 4.00  
Speed rpm : 970...1000  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Dimension a mm : 2.30  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 450  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 290  
Rack travel in m: 13.40...14.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 905...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g4  
Edition : 17.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 3330  
Injection pump  
Pump designation : PE6P120A320RS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RSV250...1100POA533  
Governor no. : 0 421 833 274

Customer-spec. information  
Customer : ENASA

Engine : 96 T1A0

1st version kW : 195.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 32...40

Testing:

1st rack travel in: 11.50

Speed rpm : 755...760  
2nd rack travel in: 4.00  
Speed rpm : 820...850  
3rd rack travel in: 4.00  
Speed rpm : 830...860  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 450  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 300  
Rack travel in m: 13.70...14.30

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 755...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g5  
 Edition : 17.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 333E  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1A0

1st version kW : 220.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.70

Speed rpm : 1010...1015  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 450  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 250  
Rack travel in m: 12.90...13.50

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1010...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g6  
 Edition : 17.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 333F  
 Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1A0

1st version kW : 221.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 212.0...214.0

1000 : (209.0...217.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.20

Speed rpm : 1010...1020  
2nd rack travel in: 4.00  
Speed rpm : 1050...1060  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 450  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 250  
Rack travel in m: 12.40...13.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1010...1020

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 12,2 b  
Edition : 31.03.89  
Replaces : 9.12.88  
Test oil : ISO-4113

Combination no. : 0 401 876 761

Injection pump  
Pump designation : PE6P120A320RS3206  
EP type number : 0 411 826 773  
Governor  
Governor design. : RSV250...900P4A374-6  
Governor no. : 0 421 833 283

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 5.0...5.2  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.5  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 275.5...277.5

1000 : (272.5...280.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.70

Speed rpm : 925...935

2nd rack travel in: 4.00

Speed rpm : 985...1015  
3rd rack travel in: 4.00  
Speed rpm : 995...1025  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 380...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 900  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 240  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 770  
Rack travel in m: 11.30...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 177.0...179.0  
1000 s: (174.0...182.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...280.0  
1000 s: (250.0...290.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 12,2 b1  
 Edition : 11.11.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 761A  
 Injection pump  
 Pump designation : PE6P120A320RS3206  
 EP type number : 0 411 826 773  
 Governor  
 Governor design. : RSV250...900P4A374-6  
 Governor no. : 0 421 833 283

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 29.0...29.2

100 s: (28.7...29.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.5

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 290.5...292.5

1000 : (287.5...295.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control Lever

position degrees: 54...62

## Testing:

1st rack travel in: 11.10

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1080...1110  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1160  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 380...440

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 1200  
Rack travel mm : 12.10...12.20

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 360  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 1030  
Rack travel in m: 11.70...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 177.0...179.0  
1000 s: (174.0...182.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1020...1030

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 290.0...310.0  
1000 s: (280.0...320.0)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 7,1 c 2  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 768  
 Injection pump  
 Pump designation : PE6P110A320RS3147  
 EP type number : 0 411 816 743  
 Governor  
 Governor design. : RSV650...750P4A421-6  
 Governor no. : 0 421 833 309

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TID 71AG

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 650.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.50

Speed rpm : 747...752

2nd rack travel in: 4.00

Speed rpm : 777...790

4th rack travel in: 930

Speed rpm : 0.30...1.40

# LOW IDLE 1

Control lever

position degrees: 31...39

Setting point w/out bumper spring

Speed rpm : 650

Rack travel in mm : 4.1

Speed rpm : 650

Rack travel in mm : 4.00...4.20

Rack travel in mm : 2.00

Speed rpm : 630...690

## SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 747...752

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...180.0

1000 s: (146.0...184.0)

Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 650

Rack travel in mm : 4.00...4.20

Del.quantity cm3/ : 17.0...21.0

1000 s: (14.5...23.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 h  
Edition : 07.02.89  
Replaces : 26.6.87  
Test oil : ISO-4113

Combination no. : 0 401 878 710

Injection pump  
Pump designation : PE8P110A320LS3845  
EP type number : 0 411 818 715  
Governor  
Governor design. : RSV350...750POA824-1  
2

Governer no. : 0 421 833 270

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 163.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

L01

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
Phasing : 270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 14.8...15.0

100 s: (14.5...15.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0  
Rack travel in mm : 7.9...8.2  
Del.quantity cm3/ : 1.4...1.8  
100 s: (1.1...2.0)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 148.0...150.0  
1000 : (145.5...152.5)  
Spread cm3 : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 22...30

Testing:

1st rack travel in: 12.90

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 1000

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.1

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 350

Rack travel in mm : 7.00...7.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 a  
Edition : 07.04.89  
Replaces : 5.8.88  
Test oil : ISO-4113

Combination no. : 0 402 035 020

Injection pump  
Pump designation : PES5P120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQ300/1100PA813-1  
Governor no. : 0 421 801 405

Customer-spec. information  
Customer : MAN

Engine : D2865LF

1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)

Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)

Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 920  
Rack travel in m: 10.60...10.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.70...7.90  
2nd pressure hPa : 125  
Rack travel in m: 8.10...8.20  
3rd pressure hPa : 430  
Rack travel in m: 10.20...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del.quantity cm3/ : 198.0...202.0  
1000 s: (195.0...205.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 200.0...206.0  
1000 s: (197.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 125.0...127.0  
1000 s: (122.0...130.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7881

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 b  
Edition : 07.04.89  
Replaces : 5.8.88  
Test oil : ISO-4113

Combination no. : 0 402 035 021

Injection pump  
Pump designation : PES5P120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQV300...1100PA876  
Governor no. : 0 421 813 661

Customer-spec. information  
Customer : MAN

Engine : D2865LF

1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
(3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.70...2.00

2nd speed rpm : 850  
travel mm : 6.00...6.20

3rd speed rpm : 1100  
travel mm : 8.10...8.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 16...24

Testing:

Speed rpm : 100

Minimum rack travel: 5.50

Speed rpm : 300

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 310...410

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 10.70...10.80

2nd speed rpm : 1100

Rack travel in m: 10.20...10.30

3rd speed rpm : 900

Rack travel in m: 10.60...10.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 7.70...7.90

2nd pressure hPa : 125

Rack travel in m: 8.10...8.20

3rd pressure hPa : 430

Rack travel in m: 10.20...10.50

START CUT-OUT

L06

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1100

Del.quantity cm3/ : 199.0...201.0

1000 s: (196.0...204.0)

Aneroid pressure h: 1000

Speed rpm : 650

Del.quantity cm3/ : 200.0...206.0

1000 s: (197.0...209.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 125.0...127.0

1000 s: (122.0...130.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 190.0...210.0

1000 s: (186.0...214.0)

## LOW IDLE

Speed rpm : 300

Rack travel in mm : 3.90...4.10

Del.quantity cm3/ : 12.0...18.0

1000 s: (9.0...21.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7882

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a13  
Edition : 31.07.87  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 402 036 044

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA658-19  
Governor no. : 0 421 801 323

Customer-spec. information  
Customer : MAN

Engine : D2866LFZ/330

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

L07

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.6...4.8  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000  
Del.quantity : 207.0...209.0  
1000 : (204.0...212.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.20  
3rd speed rpm : 875  
Rack travel in m: 11.80...12.00  
4th speed rpm : 950  
Rack travel in m: 11.20...11.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

L08

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 203.0...207.0  
1000 s: (200.0...210.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 208.0...214.0  
1000 s: (205.0...217.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7712

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a22  
Edition : 11.12.87  
Replaces : 18.8.87  
Test oil : ISO-4113

Combination no. : 0 402 036 061

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RGV300...1100PA700-2  
Governor no. : 0 421 813 543

Customer-spec. information  
Customer : MAN

Engine : D2866LF/290

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.50...1.70

2nd speed rpm : 850

travel mm : 5.70...6.00

3rd speed rpm : 1100

travel mm : 8.00...8.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 8.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 375...435

#### TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.70...9.80  
3rd speed rpm : 850  
Rack travel in m: 10.20...10.30  
4th speed rpm : 925  
Rack travel in m: 9.90...10.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 173.0...177.0  
1000 s: (170.0...180.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm3/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7761



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 g6  
 Edition : 30.09.88  
 Replaces : 11.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 064  
 Injection pump  
 Pump designation : PES6P110A720/3LS477-  
 2  
 EP type number : 0 412 016 071  
 Governor  
 Governor design. : RQ250/1100PA817-1  
 Governor no. : 0 421 801 362

Customer-spec. information  
 Customer : MAN

Engine : D2566UH/205

1st version kW : 150.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 9.1...9.4

100 s: (8.8...9.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.1...6.3  
 Del.quantity cm3/ : 1.5...2.0  
 100 s: (1.2...2.2)  
 Spread cm3 : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 800  
 Del.quantity : 91.0...94.0  
 1000 : (88.5...96.5)  
 Spread cm3 : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version

Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

## Testing:

1st rack travel in: 9.50  
 Speed rpm : 1145...1160  
 2nd rack travel in: 4.00  
 Speed rpm : 1215...1245

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.2

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.70

Speed rpm : 250

Rack travel in mm : 6.10...6.30

Rack travel in mm : 2.00

Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.50...10.60

2nd speed rpm : 500

Rack travel in m: 10.50...10.70

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1100

Del.quantity cm3/ : 101.0...109.0

1000 s: (98.0...112.0)

Speed rpm : 500

Del.quantity cm3/ : 77.0...85.0

1000 s: (74.0...88.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 110.0...130.0

1000 s: (106.0...134.0)

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.10...6.30

Del.quantity cm3/ : 15.0...20.0

1000 s: (12.5...22.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

: MAN-NR. 2-7768

APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a28  
Edition : 30.09.88  
Replaces : 11.12.87  
Test oil : ISO-4113

Combination no. : 0 402 036 069

Injection pump  
Pump designation : PES6P120A720/3LS470-  
3

EP type number : 0 412 026 051  
Governor  
Governor design. : RQ300/1100PA679-2  
Governor no. : 0 421 801 402

Customer-spec. information  
Customer : MAN

Engine : D2866LUL

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.60  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 750  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 925  
Rack travel in m: 10.70...11.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.60...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 210  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 375  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del.quantity cm3/ : 190.0...196.0  
1000 s: (187.0...199.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7878

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a30  
Edition : 11.11.88  
Replaces : 6.11.87  
Test oil : ISO-4113

Combination no. : 0 402 036 071

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-3  
Governor no. : 0 421 801 422

Customer-spec. information  
Customer : MAN

Engine : D2866TOH

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 191.0...193.0

1000 : (188.0...196.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.30  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 385...425

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 980  
Rack travel in m: 10.90...11.10  
4th speed rpm : 1030  
Rack travel in m: 10.40...10.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.60...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 240  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 520  
Rack travel in m: 9.90...10.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

L16

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 193.0...197.0  
1000 s: (190.0...200.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 184.0...190.0  
1000 s: (181.0...193.0)  
Aneroid pressure h: 20  
Speed rpm : 500  
Del.quantity cm3/ : 168.0...180.0  
1000 s: (165.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a31  
Edition : 10.02.89  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 0 402 036 073

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-4  
Governor no. : 0 421 801 425

Customer-spec. information  
Customer : MAN

Engine : D2866KUH

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 750  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 880  
Rack travel in m: 12.30...12.50  
4th speed rpm : 925  
Rack travel in m: 11.70...12.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 520  
Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

L18

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 238.0...244.0  
1000 s: (235.0...247.0)  
Aneroid pressure h: 20  
Speed rpm : 500  
Del.quantity cm3/ : 191.0...197.0  
1000 s: (188.0...200.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7904

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a33  
Edition : 30.09.88  
Replaces : 6.4.88  
Test oil : ISO-4113

Combination no. : 0 402 036 074

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA658-24  
Governor no. : 0 421 801 437

Customer-spec. information  
Customer : MAN

Engine : D2866K0H

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.7...4.9  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 920  
Rack travel in m: 12.40...12.60  
4th speed rpm : 985  
Rack travel in m: 11.60...11.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.20...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 80  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 400  
Rack travel in m: 11.00...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

L20

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Speed rpm : 500  
Del.quantity cm3/ : 188.0...200.0  
1000 s: (185.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7910

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a35  
Edition : 07.04.89  
Replaces : 11.7.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 076  
  
Injection pump  
Pump designation : PES6P120A720/3LS470-4  
EP type number : 0 412 026 055  
Governor  
Governor design. : RQV300...1100PA700-5  
Governor no. : 0 421 813 713

Customer-spec. information  
Customer : MAN

Engine : D2866LFG

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.8...5.0  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.50...1.90  
2nd speed rpm : 450  
travel mm : 2.90...3.50  
3rd speed rpm : 850  
travel mm : 5.50...5.90  
4th speed rpm : 1100  
travel mm : 7.40...7.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1175  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000

Del.quantity : 202.0...204.0  
1000 : (199.0...207.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 9.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 1100  
Rack travel in m: 10.80...10.90  
3rd speed rpm : 865  
Rack travel in m: 11.30...11.40  
4th speed rpm : 985  
Rack travel in m: 10.90...11.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 85

Rack travel in m: 9.30...9.40  
3rd pressure hPa : 310  
Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 203.0...207.0  
1000 s: (200.0...210.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 198.0...204.0  
1000 s: (195.0...207.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7911

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a37  
 Edition : 10.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 077  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA813-6  
 Governor no. : 0 421 801 466

Customer-spec. information  
 Customer : MAN

Engine : D2866TUH/001

1st version kW : 213.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 200.0...202.0

1000 : (197.0...205.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.40  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 11.40...11.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 350  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 208.0...214.0  
1000 s: (205.0...217.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 215.0...235.0  
1000 s: (211.0...239.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7893

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 j2  
 Edition : 31.03.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 729  
 Injection pump  
 Pump designation : PES6P120A720LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/1100PA813-7  
 Governor no. : 0 421 801 474

Customer-spec. information  
 Customer : MAN

Engine : D2866LUH

1st version kW : 273.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100

Minimum rack travel: 5.70

Speed rpm : 300

Rack travel in mm : 4.10...4.30

Rack travel in mm : 2.00

Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 14.20...14.40

2nd speed rpm : 1100

Rack travel in m: 13.00...13.10

3rd speed rpm : 885

Rack travel in m: 13.80...14.00

4th speed rpm : 935

Rack travel in m: 13.20...13.50

#### Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 1200

Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.50...8.70

2nd pressure hPa : 190

Rack travel in m: 8.90...9.00

3rd pressure hPa : 520

Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200

L26

Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1145...1160

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,5 a  
Edition : 07.04.89  
Replaces : 11.85  
Test oil : ISO-4113

Combination no. : 0 402 045 022

Injection pump  
Pump designation : PES5P110A820LS434  
EP type number : 0 412 015 020  
Governor  
Governor design. : RQ300/1100PA327-3  
Governor no. : 0 421 801 151

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM409

1st version kW : 141.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 11.8...12.0

100 s: (11.5...12.3)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
Rack travel in mm : 8.0...8.2  
Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 118.0...120.0

1000 : (115.0...123.0)

Spread cm3 : 4.00  
1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 14.2

Testing:

1st rack travel in: 10.50

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1170...1200

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 375...415

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 100.0...104.0  
1000 s: (97.0...107.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,5 a 4  
Edition : 07.04.89  
Replaces : 11.85  
Test oil : ISO-4113

Combination no. : 0 402 045 023

Injection pump  
Pump designation : PES5P110A820LS434  
EP type number : 0 412 015 020  
Governor  
Governor design. : RQ300/1100PA327-4  
Governor no. : 0 421 801 173

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM409

1st version kW : 135.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm<sup>3</sup>/ : 11.0...11.2

100 s: (10.7...11.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 110.0...112.0

1000 : (107.5...114.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 14.2

Testing:

1st rack travel in: 9.40

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.60...7.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 90.0...94.0  
1000 s: (87.0...97.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,5 a 9  
Edition : 07.04.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 045 026

Injection pump  
Pump designation : PES5P110A820LS434  
EP type number : 0 412 015 020  
Governor  
Governor design. : RQ300/1100PA327-4  
Governor no. : 0 421 801 173

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM409

1st version kW : 135.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 11.0...11.2

100 s: (10.7...11.5)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 110.0...112.0

1000 : (107.0...115.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 14.2

Testing:

1st rack travel in: 9.40

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.60...7.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 90.0...94.0  
1000 s: (87.0...97.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,5 a 10  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 045 027

Injection pump  
 Pump designation : PES5P110A820LS434  
 EP type number : 0 412 015 020  
 Governor  
 Governor design. : RQV300...1100PA594-1  
 Governor no. : 0 421 813 336

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM409

1st version kW : 135.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 11.0...11.2

100 s: (10.7...11.5)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 110.0...112.0

1000 : (107.0...115.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1175...1205

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 30...38

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION  
Speed rpm : 320...435

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 91.0...95.0  
1000 s: (88.0...98.0)  
1000 s: (9.00)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 b  
Edition : 21.04.89  
Replaces : 7.85  
Test oil : ISO-4113  
Combination no. : 0 402 046 132  
Injection pump  
Pump designation : PES6P100A820LS264Z  
EP type number : 0 412 006 026  
Governor  
Governor design. : RQ300/1100PA327R  
Governor no. : 0 421 801 062

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 154.5  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm3 : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 14.2

Testing:

1st rack travel in: 11.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.6

Testing:  
Speed rpm : 100  
Minimum rack trave: 10.10  
Speed rpm : 300  
Rack travel in mm : 8.50...8.70  
Rack travel in mm : 2.00  
Speed rpm : 400...430

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 b  
 Edition : 21.04.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 151  
 Injection pump  
 Pump designation : PES6P100A820LS351Y  
 EP type number : 0 412 006 030  
 Governor  
 Governor design. : RQ300/1100PA327R  
 Governor no. : 0 421 801 062

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 147.1  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 0.5...1.1

100 s: (0.2...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Del.quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm3 : 3.00

1000 : (6.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 14.2

## Testing:

1st rack travel in: 10.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.60  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 p  
Edition : 21.04.89  
Replaces : 11.85  
Test oil : ISO-4113

Combination no. : 0 402 046 197

Injection pump  
Pump designation : PES6P100A820LS351  
EP type number : 0 412 006 028  
Governor  
Governor design. : RQ300/950PA483R  
Governor no. : 0 421 801 103

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM407H

1st version kW : 161.8  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 125.0...127.0

1000 : (123.0...129.0)

Spread cm3 : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 14.2

Testing:

1st rack travel in: 12.40

Speed rpm : 990...1000

2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 10.10  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ALO 13,8 e1  
Edition : 3.5.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 203  
  
Injection pump  
Pump designation : PES6P120A320RS411  
Governor  
Governor design. : RQV445...1250PA497K

Customer-spec. information  
Customer : ALLIS CHALMERS

Engine : 6120 T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8,00X2,00X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 18.6...18.8

100 s: (-)

Spread cm3 : 0.5

100 s: (-)

2nd speed rpm : 445  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 1.9...2.5  
100 s: (-)  
Spread cm3 : 0.8  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.50...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 186.5...188.5

1000 : (-)

Spread cm3 : 5.0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 56...62

Testing:

1st rack travel in: 9.30

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1385...1415

4th rack travel in: 1450

Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever

position degrees: 15.5...21.5

Testing:

Speed rpm : 100

Minimum rack trave: 7.30

Speed rpm : 445  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 705...765

#### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 800  
Rack travel in m: 10.80...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 184.4...188.5  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...250.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 445  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (-)

Remarks:

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,1 q7  
Edition : 11.01.88  
Replaces : 10.85  
Test oil : ISO-4113

Combination no. : 0 402 046 208

Injection pump  
Pump designation : PES6P120A720LS388  
EP type number : 0 412 026 030  
Governor  
Governor design. : RQ250/1100PA509  
Governor no. : 0 421 801 117

Customer-spec. information  
Customer : MAN

Engine : D2566MKF

1st version kW : 206.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 17.8...18.0

100 s: (17.5...18.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 700

Del.quantity : 178.0...180.0

1000 : (175.0...183.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.20

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.80  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 1100  
Rack travel in m: 10.20...10.30  
3rd speed rpm : 875  
Rack travel in m: 11.10...11.30  
4th speed rpm : 985  
Rack travel in m: 10.40...10.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.30  
2nd pressure hPa : 310  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 430  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

M16

Speed rpm : 1100  
Del.quantity cm3/ : 160.0...166.0  
1000 s: (157.0...169.0)  
Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm3/ : 171.0...177.0  
1000 s: (168.0...180.0)  
Aneroid pressure h: 310  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...137.0  
1000 s: (128.0...140.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack travel: 9.20  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11.1q26  
Edition : 11.01.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 209  
Injection pump  
Pump designation : PES6P120A720LS388  
EP type number : 0 412 026 030  
Governor  
Governor design. : RQ250/1100PA509  
Governor no. : 0 421 801 117

Customer-spec. information  
Customer : MAN

Engine : D2566MK

1st version kW : 206.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 17.8...18.0

100 s: (17.5...18.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 700

Del.quantity : 178.0...180.0

1000 : (175.0...183.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.20

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.80  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 1100  
Rack travel in m: 10.20...10.30  
3rd speed rpm : 875  
Rack travel in m: 11.10...11.30  
4th speed rpm : 985  
Rack travel in m: 10.40...10.70

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.20...9.30

2nd pressure hPa : 310

Rack travel in m: 10.30...10.40

3rd pressure hPa : 430

Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 1100  
Del.quantity cm3/ : 160.0...166.0  
1000 s: (157.0...169.0)  
Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm3/ : 171.0...177.0  
1000 s: (168.0...180.0)  
Aneroid pressure h: 310  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...137.0  
1000 s: (128.0...140.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 13,8 s1  
 Edition : 10.02.89  
 Replaces : 4.84  
 Test oil : ISO-4113

Combination no. : 0 402 046 227

Injection pump  
 Pump designation : PES6P120A820LS249Y  
 EP type number : 0 412 026 041  
 Governor  
 Governor design. : RQV300...1000PA204/4  
 Governor no. : 0 421 813 121

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8217.32.110

1st version kW : 161.8  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.10...9.20

Del.quantity cm3/ : 16.6...17.0

100 s: (16.3...17.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.2...3.0

100 s: (1.9...3.3)

Spread cm3 : 0.6

100 s: (0.9)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.90...2.40

2nd speed rpm : 450  
 travel mm : 3.50...4.20

3rd speed rpm : 800  
 travel mm : 6.30...6.70

4th speed rpm : 1000  
 travel mm : 7.80...8.00

5th speed rpm : 1350  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1035

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 166.0...170.0

1000 : (163.0...173.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 8.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1115...1145

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 300...395

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10

Speed rpm : 1040...1050

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

## APPLICATION

Rail car

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L 2  
 Edition : 14.04.89  
 Replaces : 11.85  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 236  
 Injection pump  
 Pump designation : PES6P110A820LS442  
 EP type number : 0 412 016 060  
 Governor  
 Governor design. : RQ300/950PA483R  
 Governor no. : 0 421 801 103

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM407

1st version kW : 162.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 12.2...12.4

100 s: (11.9...12.7)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 122.0...124.0

1000 : (119.0...127.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.10

Speed rpm : 990...1000

2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.70  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 410...450

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 118.0...122.0  
1000 s: (115.0...125.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 h  
Edition : 14.04.89  
Replaces : 11.85  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 239  
  
Injection pump  
Pump designation : PES6P110A820LS422  
EP type number : 0 412 016 057  
Governor  
Governor design. : RQ300/1100PA327-1  
Governor no. : 0 421 801 140

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 407 H

1st version kW : 147.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 10.3...10.5

100 s: (10.0...10.8)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 103.0...105.0

1000 : (100.0...108.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.60

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 300

Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00

Speed rpm : 350...390

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 75.0...79.0

1000 s: (72.0...82.0)

Spread cm3 : 6.00

1000 s: (9.00)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L 5  
 Edition : 29.03.89  
 Replaces : 12.1.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 240  
 Injection pump  
 Pump designation : PES6P110A820LS442  
 EP type number : 0 412 016 060  
 Governor  
 Governor design. : RQ300/1100PA327-5  
 Governor no. : 0 421 801 163

Customer spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 162.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.3...11.5

100 s: (11.0...11.8)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 113.0...115.0

1000 : (110.0...118.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 90.0...94.0  
1000 s: (87.0...97.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 h 1  
 Edition : 14.04.89  
 Replaces : 11.85  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 243  
 Injection pump  
 Pump designation : PES6P110A820LS422  
 EP type number : 0 412 016 057  
 Governor  
 Governor design. : RQ300/950PA483-1  
 Governor no. : 0 421 801 185

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 137.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 10.2...10.4

100 s: (9.9...10.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 13.00...13.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 102.0...104.0

1000 : (99.0...107.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.4

Testing:

1st rack travel in: 10.00

Speed rpm : 990...1000

2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 7.9

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Rack travel in mm : 2.00  
Speed rpm : 375...415

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 93.0...97.0  
1000 s: (90.0...100.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 b 2  
 Edition : 29.03.89  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 0 402 046 247

Injection pump  
 Pump designation : PES6P120A32ORS417  
 EP type number : 0 412 026 036  
 Governor  
 Governor design. : RQV300...1150PA527-1  
 K  
 Governor no. : 0 421 815 165

Customer-spec. information  
 Customer : RVI

Engine : MIDR 062030

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.50...8.60

Del.quantity cm3/ : 14.4...14.6

100 s: (14.1...14.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 600.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm3/ : 1.8...2.4  
 100 s: (1.5...2.7)

Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.70...2.10

2nd speed rpm : 900  
 travel mm : 5.80...6.20

3rd speed rpm : 1150  
 travel mm : 8.00...8.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1190  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
 Del.quantity : 144.0...146.0  
 1000 : (141.0...149.0)

Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 7.50  
Speed rpm : 1205...1215  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : 1.80  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 8.50...8.60  
2nd speed rpm : 750  
Rack travel in m: 7.60...7.70  
3rd speed rpm : 500  
Rack travel in m: 7.00...7.20  
4th speed rpm : 350  
Rack travel in m: 6.70...7.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 122.0...128.0  
1000 s: (119.0...131.0)  
Speed rpm : 500  
Del.quantity cm3/ : 69.0...75.0  
1000 s: (66.0...78.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.50  
Speed rpm : 1205...1215

NO2

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.30...3.50  
Del.quantity cm3/ : 18.0...24.0  
1000 s: (15.0...27.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:  
Start-of-delivery mark 6° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 h 2  
Edition : 14.04.89  
Replaces : 11.85  
Test oil : ISO-4113  
Combination no. : 0 402 046 269  
Injection pump  
Pump designation : PES6P110A820LS422  
EP type number : 0 412 016 057  
Governor  
Governor design. : RQ300/1100PA681  
Governor no. : 0 421 801 222

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 147.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 10.3...10.5

100 s: (10.0...10.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 103.0...105.0

1000 : (100.0...108.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.60

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 76.0...80.0  
1000 s: (73.0...83.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,4 f  
Edition : 29.03.89  
Replaces : 11.85  
Test oil : ISO-4113  
Combination no. : 0 402 046 287  
Injection pump  
Pump designation : PES6P100A720LS471  
EP type number : 0 412 006 034  
Governor  
Governor design. : RQ250/1100PA685  
Governor no. : 0 421 801 227

Customer-spec. information  
Customer : MAN

Engine : D2566UH/200

1st version kW : 147.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100

Minimum rack trave: 6.50

Speed rpm : 250

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 12.30...12.40

2nd speed rpm : 1100

Rack travel in m: 12.20...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 85.0...88.0

1000 s: (82.5...90.5)

Speed rpm : 1100

Del.quantity cm3/ : 100.0...104.0

1000 s: (97.5...106.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 115.0...135.0

1000 s: (111.0...139.0)

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10

Del.quantity cm3/ : 12.0...18.0

1000 s: (9.5...20.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

NO6

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L 9  
Edition : 14.04.89  
Replaces : 11.85  
Test oil : ISO-4113  
Combination no. : 0 402 046 298  
Injection pump  
Pump designation : PES6P110A820LS442  
EP type number : 0 412 016 060  
Governor  
Governor design. : RQ250/1100PA327-8  
Governor no. : 0 421 801 256

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : 407 STEHEND

1st version kW : 162.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 11.3...11.5

100 s: (11.0...11.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 113.0...115.0

1000 : (110.5...117.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 250  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 90.0...94.0  
1000 s: (87.0...97.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L19  
 Edition : 14.04.89  
 Replaces : 19.5.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 299  
 Injection pump  
 Pump designation : PES6P110A820LS442  
 EP type number : 0 412 016 060  
 Governor  
 Governor design. : RQ250/950PA483-3  
 Governor no. : 0 421 801 363

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM407

1st version kW : 147.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 11.0...11.2

100 s: (10.7...11.5)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 110.0...112.0

1000 : (107.0...115.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.40

Speed rpm : 990...1000

2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.70  
Speed rpm : 250  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 97.0...101.0  
1000 s: (94.0...104.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,1q31  
 Edition : 09.03.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 322  
 Injection pump  
 Pump designation : PES6P110A720LS375  
 EP type number : 0 412 016 053  
 Governor  
 Governor design. : RQ250/1100PA658-17  
 Governor no. : 0 421 801 309

Customer-spec. information  
 Customer : MAN

Engine : D2566 MTUH

1st version kW : 195.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 14.3...14.5

100 s: (14.0...14.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 143.0...145.0

1000 : (140.5...147.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 250  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.70...12.90  
2nd speed rpm : 1100  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 810  
Rack travel in m: 12.50...12.70  
4th speed rpm : 950  
Rack travel in m: 12.00...12.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 200  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 310  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm3/ : 156.0...160.0  
1000 s: (153.0...163.0)

Aneroid pressure h: 200  
Speed rpm : 500  
Del.quantity cm3/ : 123.0...127.0  
1000 s: (120.0...130.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 112.0...114.0  
1000 s: (109.5...116.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks: : MAN-NR. 2-7588

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L13  
 Edition : 14.04.89  
 Replaces : 10.85  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 324  
 Injection pump  
 Pump designation : PES6P110A820LS442  
 EP type number : 0 412 016 060  
 Governor  
 Governor design. : RQ300/1100PA327-9  
 Governor no. : 0 421 801 327

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 407 STEHEND

1st version kW : 162.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 11.3...11.5

100 s: (11.0...11.7)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.1...8.3  
 Del.quantity cm3/ : 1.2...1.8  
 100 s: (0.9...2.0)  
 Spread cm3 : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 113.0...115.0  
 1000 : (110.5...117.5)  
 Spread cm3 : 4.00  
 1000 : (8.00)

## RATED SPEED

1st version

Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 13.5

## Testing:

1st rack travel in: 10.00  
 Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.2

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 8.10...8.30  
Rack travel in mm : 2.00  
Speed rpm : 375...415

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 88.0...92.0  
1000 s: (85.0...95.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 d 5  
 Edition : 29.03.89  
 Replaces : 12.12.86  
 Test oil : ISO-4113

Combination no. : 0 402 046 328

Injection pump  
 Pump designation : PES6P120A320RS419-2  
 EP type number : 0 412 026 048  
 Governor  
 Governor design. : RQ275/950PA753-1  
 Governor no. : 0 421 801 377

## Customer-spec. information

Customer : RVI

Engine : MIDS/PS062045 FC

1st version kW : 144.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10.00...11.00

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.70...8.80

Del.quantity cm3/ : 11.7...11.9

100 s: (11.4...12.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 525

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 500

Aneroid pressure h: 700

Del.quantity : 117.0...119.0

1000 : (114.0...122.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 525

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 7.20  
Speed rpm : 1015...1030  
2nd rack travel in: 4.00  
Speed rpm : 1150...1080  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.5

### Testing:

Speed rpm : 200  
Minimum rack travel: 5.30  
Speed rpm : 275  
Rack travel in mm : 3.40...3.60  
Rack travel in mm : 2.00  
Speed rpm : 300...340

### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 8.70...8.80  
2nd speed rpm : 950  
Rack travel in m: 8.00...8.20  
3rd speed rpm : 750  
Rack travel in m: 8.30...8.50

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 8.70...8.80

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.90...8.00  
2nd pressure hPa : 245  
Rack travel in m: 8.50...8.60

### START CUT-OUT

Speed 1/min : 195 (215)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (133.0...143.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 101.0...103.0  
1000 s: (98.0...106.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.20  
Speed rpm : 1015...1030

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 3.40...3.60

### Remarks:

:  
Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 d 6  
Edition : 29.03.89  
Replaces : 12.12.86  
Test oil : ISO-4113

Combination no. : 0 402 046 329

Injection pump  
Pump designation : PES6P120A320RS419-2  
EP type number : 0 412 026 048  
Governor  
Governor design. : RQ275/950PA843  
Governor no. : 0 421 801 378

Customer-spec. information  
Customer : RVI

Engine : MIDS/PS062045D/A

1st version kW : 129.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.00...8.10

Del.quantity cm3/ : 10.4...10.6

100 s: (10.1...10.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 4.2...4.4  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 525

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 500  
Del.quantity : 104.0...106.0  
1000 : (101.0...109.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 525

Rack travel in mm : 20.0

Testing:

1st rack travel in: 7.00

Speed rpm : 1015...1030

2nd rack travel in: 4.00

Speed rpm : 1040...1070

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.6

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.20  
Speed rpm : 275  
Rack travel in mm : 3.50...3.70  
Rack travel in mm : 2.00  
Speed rpm : 300...340

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 8.00...8.10  
2nd speed rpm : 950  
Rack travel in m: 7.40...7.50  
3rd speed rpm : 775  
Rack travel in m: 7.60...7.80

#### START CUT-OUT

Speed 1/min : 210 (230)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 124.0...128.0  
1000 s: (121.0...131.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 7.00  
Speed rpm : 1015...1030

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 3.50...3.70

Remarks:

N18

:  
Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 a 7  
Edition : 29.03.89  
Replaces : 5.8.88  
Test oil : ISO-4113

Combination no. : 0 402 046 330

Injection pump  
Pump designation : PES6P120A320RS419-2  
EP type number : 0 412 026 048  
Governor  
Governor design. : RQ275/1050PA844  
Governor no. : 0 421 801 379

Customer-spec. information  
Customer : RVI

Engine : MIPS062045B

1st version kW : 176.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 3.5...3.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.20

Speed rpm : 1105...1120

2nd rack travel in: 4.00

Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.6

#### Testing:

Speed rpm : 200  
Minimum rack travel: 5.50  
Speed rpm : 275  
Rack travel in mm : 3.50...3.70  
Rack travel in mm : 2.00  
Speed rpm : 310...350

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 700  
Rack travel in m: 9.70...9.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 9.20...9.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.10...8.30  
2nd pressure hPa : 260  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 230  
Rack travel in m: 8.40...8.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 148.0...154.0  
1000 s: (145.0...157.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 103.0...105.0  
1000 s: (100.0...108.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.20  
Speed rpm : 1105...1120

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 3.50...3.70

#### Remarks:

:  
Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 L  
Edition : 07.04.89  
Replaces : 26.8.88  
Test oil : ISO-4113  
Combination no. : 0 402 046 336  
Injection pump  
Pump designation : PES6P120A72ORS517  
EP type number : 0 412 026 054  
Governor  
Governor design. : RQ750PA895  
Governor no. : 0 421 801 447

Customer-spec. information  
Customer : MAN

Engine : D2866TUE

1st version kW : 190.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.4...4.6

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8  
100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 210.0...212.0

1000 : (207.0...215.0)

Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 10.80

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 788...801

4th rack travel in: 900

Speed rpm : 0.00...1.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

APPLICATION

Generator



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 g  
Edition : 29.03.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 337  
Injection pump  
Pump designation : PES6P120A320RS520  
EP type number : 0 412 026 056  
Governor  
Governor design. : RQV275...1050PA906  
Governor no. : 0 421 813 724

Customer-spec. information  
Customer : RVI

Engine : MIDR062045D

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 450

travel mm : 3.30...3.80

3rd speed rpm : 800

travel mm : 5.70...6.00

4th speed rpm : 1050

travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 9.30  
Speed rpm : 1110...1120  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.50  
Speed rpm : 275  
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION  
Speed rpm : 275...390

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.10...8.20  
2nd pressure hPa : 360  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 160  
Rack travel in m: 8.50...8.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 650  
Del.quantity cm3/ : 171.0...177.0  
1000 s: (168.0...180.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 102.0...104.0  
1000 s: (99.0...107.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.10...4.30

Remarks:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 i 2  
 Edition : 29.03.89  
 Replaces : 2.84  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 725  
 Injection pump  
 Pump designation : PES6P120A820LS3077-10  
 EP type number : 0 412 026 714  
 Governor  
 Governor design. : RQ300/1100PA606-2  
 Governor no. : 0 421 801 249

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM407A

1st version kW : 206.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 165.0...167.0

1000 : (-)

Spread cm3 : 5.00

1000 : (-)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.1

Testing:

Speed rpm : 100

Minimum rack travel: 6.50

Speed rpm : 300

Rack travel in mm : 5.00...5.20

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.00...11.10

2nd speed rpm : 950

Rack travel in m: 11.25...11.45

3rd speed rpm : 850

Rack travel in m: 11.75...11.95

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.40...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 280

Rack travel in m: 10.80...10.90

2nd pressure hPa : 350

Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 178.5...181.5

1000 s: (-)

Spread cm<sup>3</sup> : 8.00

1000 s: (-)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 144.0...146.0

1000 s: (-)

Spread cm<sup>3</sup> : 8.00

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 150.0...170.0

1000 s: (-)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 a 1  
Edition : 14.04.89  
Replaces : 9.3.87  
Test oil : ISO-4113

Combination no. : 0 402 046 751

Injection pump  
Pump designation : PES6P110A820LS3131  
EP type number : 0 412 016 715  
Governor  
Governor design. : RQ300/1100PA723  
Governor no. : 0 421 801 265

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
: (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 14.0...14.2

100 s: (13.7...14.5)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
Rack travel in mm : 7.1...7.3  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)

Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 14.70...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 140.0...142.0

1000 : (137.0...145.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.80  
Speed rpm : 300  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 117.0...121.0  
1000 s: (114.0...124.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

: